







The Executors of the Estate of Heber R. Bishop certify that this edition of "Investigations and Studies in Jade—Catalogue" consists of one hundred copies printed on American hand-made paper, ninety-eight of which are for presentation and two for copyright. After printing, the type was distributed and all materials used in the preparation of the work were destroyed, by direction of the Executors.

This copy is Number

85







INVESTIGATIONS AND STUDIES

IN

JADE

—

CATALOGUE







THE BISHOP COLLECTION

---

*New York. Metropolitan museum of art. The Bishop collection.*

# INVESTIGATIONS AND STUDIES

IN

# JADE

---

# CATALOGUE

VOLUME TWO



NEW YORK  
PRIVATELY PRINTED  
1906

PUBLIC LIBRARY  
MEDFORD MASS



139  
N 42  
v. 2  
12406



Copyright, 1900, by HEBER R. BISHOP, and 1906, by  
THE ESTATE OF HEBER R. BISHOP

*All rights reserved*

PUBLIC LIBRARY  
MEDFORD MASS



## CONTENTS

	PAGE
I BRIEF INTRODUCTION, WITH EXPLANATORY STATEMENT AS TO THE ARRANGEMENT . . . . .	xiii
II MINERALOGICAL SYNOPSIS . . . . .	1
DESCRIPTIONS OF MINERALOGICAL SPECIMENS, CLASSED ACCORDING TO LOCALITY AND COLOR	
III ARCHÆOLOGICAL SYNOPSIS . . . . .	53
DESCRIPTIONS OF PREHISTORIC SPECIMENS, CLASSED ACCORDING TO LOCALITY AND FORM:	
<i>a.</i> Implements . . . . .	56
<i>b.</i> Weapons . . . . .	89
<i>c.</i> Casts from European Museums . . . . .	90
<i>d.</i> Partially Worked Pieces . . . . .	96
<i>e.</i> Ornaments and Ceremonial Objects . . . . .	97
IV ANCIENT OR TOMB PIECES FROM CHINA . . . . .	102
WITH BRIEF INTRODUCTION	
V ART OBJECTS. HISTORICAL PERIOD . . . . .	114
WITH BRIEF INTRODUCTION AND CLASSIFICATION	
VI INDEX . . . . .	269







# LIST OF ILLUSTRATIONS

## FULL-PAGE LITHOGRAPHS

THE FORBES COMPANY

NUMBER	FACING PAGE	NUMBER	FACING PAGE
4 Fragment of Boulder		303 Small Mask	
14 Small Fragment		306 Long Tubular Bead	74
71 Rough Fragment		308 Ornament	
97 Fragment of Boulder	4	309 Amulet	
104 Fragment of Boulder		286 Adze	
120 Part of Thin Slab		289 Axe	87
141 Fragment		296 War Club	
150 Fragment		293 Hatchet	
159 Thin Slab		294 Cleaver	89
160 Small Broken Slab		322 Ornamented Celt	
162 Fragment of Boulder	50	324 Small Celt	
166 Small Thin Slab		297 Battle-axe	90
172 Hatchet in Holder		315 Neck-ornament	
176 Hatchet		A Rolled Pebble	
177 Hatchet		B Rolled Pebble	
178 Hatchet		C Flat Hatchet	90
182 Hatchet	58	N Small Thick Hatchet	
188 Chisel		O Chisel-shaped Hatchet	
191 Knife		D Long Flat Hatchet	
195 Knife		G Flat Hatchet	
205 Knife		J Flat Hatchet	92
180 Hatchet		K Long Flat Hatchet	
181 Hatchet		L Flat Hatchet	
183 Hatchet		E Large Flat Hatchet	
186 Chisel		F Small Flat Hatchet	
192 Knife	61	H Long Flat Hatchet	93
194 Knife		I Long Thick Hatchet	
196 Knife in Handle		M Long Flat Hatchet	
197 Knife in Handle		P Long Thick Hatchet	
198 Hatchet		Q Long Flat Hatchet	94
234 Chisel		R Small Thick Hatchet	
247 Adze in Holder		S Small Figure	
280 Adze		317 Tablet of Rank	
281 Hatchet	74	324 Small Celt	
282 Chisel		325 Sacrificial Tablet	104
283 Knife		330 Archer's Thumb-ring	
295 Weapon		331 Ancient Signet	

## FULL-PAGE WOODCUTS

NUMBER	ENGRAVER	FACING PAGE	NUMBER	ENGRAVER	FACING PAGE
369 Square Vase	Aikman	124	622 Buddhist Bowl	Leveille	202
384 Rectangular Vase	Leveille	129	628 Screen	Aikman	204
440 Buddhist Monk	"	145	652 Round Screen	Klotz	214
449 Mountain Landscape	"	149	762 Chrysanthemum Bowl	Aikman	250



LIST OF ILLUSTRATIONS

ILLUSTRATIONS IN THE TEXT

MINERALOGICAL SECTION

NUMBER	TITLE	PAGE	NUMBER	TITLE	PAGE
96	Boulder . . . . .	31	161	Thin Section of Boulder . . . . .	50
131	Section of Boulder . . . . .	41			

ARCHÆOLOGICAL SECTION

IMPLEMENTS

NUMBER	TITLE	PERIOD	PAGE	NUMBER	TITLE	PERIOD	PAGE
168	Hatchet . . . . .	Prehistoric	57	226	Hatchet . . . . .	Prehistoric	72
172	Hatchet (with holder) . . . . .	"	58	AA	Gritstone . . . . .	Aboriginal	73
174	Hatchets . . . . .	"	59	240	Axe . . . . .	"	76
175				244	Adzes . . . . .	"	77
178	Hatchet . . . . .	"	60	246			
184	Broken Hatchet . . . . .	"	62	247	Adze (in holder) . . . . .	"	78
185	Broken Hatchet . . . . .	"	63	256	Adze . . . . .	"	80
187	Chisel . . . . .	"	63	257	Hatchet . . . . .	"	80
189	Knife (with horn handle) . . . . .	"	64	260	Chisel . . . . .	"	81
190	Small Knife . . . . .	"	64	263	Knife ( <i>U-lu-ra</i> ) . . . . .	"	81
193	Knife . . . . .	"	65	266	Knife ( <i>U-lu-ra</i> ) . . . . .	"	82
206	Long Knife . . . . .	"	68	274	Scraper (mounted in decorated horn handle) . . . . .	"	84
219	Axe . . . . .	"	71				
222	Hatchet . . . . .	"	71	278	Hand-pestle . . . . .	"	85
224	Chisel . . . . .	"	72	288	Divided Hatchet . . . . .	"	87

PARTIALLY WORKED PIECES

NUMBER	TITLE	PERIOD	PAGE	NUMBER	TITLE	PAGE
298	Worked Fragment . . . . .	Very Ancient	96	299	Large Partly Worked Piece . . . . .	97

ORNAMENTS AND CEREMONIAL OBJECTS

NUMBER	TITLE	PERIOD	PAGE
310	Teeth Inlaid with Jadeite . . . . .	Prehistoric	101

TOMB PIECES

NUMBER	TITLE	PERIOD	PAGE	NUMBER	TITLE	PERIOD	PAGE
319	Pierced Medallion ( <i>Pi</i> ) . . . . .	Ancient	105	339	Wine-pot ( <i>Chiu Hu</i> ) . . . . .	Early Ming Dynasty	111
327	Gong ( <i>Ch'ing</i> ) . . . . .	116-111 B.C.	107	340	Sacrificial Vessel ( <i>Yi Lu</i> ) . . . . .	Period Unknown	112
329	Armlet ( <i>Cho-tzū</i> ) . . . . .	206 B.C.-220 A.D.	108	341	Engraved Celt ( <i>Hua Chan</i> ) . . . . .	"	112
336	Lotus-leaf Cup ( <i>Ho-yeh Pei</i> ) . . . . .	618-906 A.D.	110	342	Signet ( <i>T'u Shu</i> ) . . . . .	"	112
337	Lotus-leaf Vase ( <i>Ho-yeh P'ing</i> ) . . . . .	About XIIIth Century	111	347	Curved Bead ( <i>Magatama</i> ) . . . . .	Ancient	113

ART OBJECTS

HISTORICAL PERIOD

NUMBER	TITLE	PERIOD	PAGE	NUMBER	TITLE	PERIOD	PAGE
348	Bell ( <i>Chung</i> ) . . . . .	206 B.C.-220 A.D.	117	370	Double-cylinder Vase ( <i>Shuang Kuan P'ing</i> ) . . . . .	1368-1644	124
351	Wine-jug ( <i>Chiu Kuan</i> ) . . . . .	1368-1644	118	376	Pair of Peaches ( <i>Shuang Tao</i> ) . . . . .	"	126
355	Water-receptacle ( <i>Hsi-tzū</i> ) . . . . .	"	119	378	A Screen ( <i>Ch'a P'ing</i> ) . . . . .	"	126
360	Oval Dish ( <i>Hsi-tzū</i> ) . . . . .	"	120	379	Small Screen ( <i>Ch'a P'ing</i> ) . . . . .	"	127
362	Plum-tree Vase ( <i>Mei Hua P'ing</i> ) . . . . .	"	121	380	Large Dish ( <i>Hsi-tzū</i> ) . . . . .	"	127
363	Gourd-shaped Vase ( <i>Hu Lu P'ing</i> ) . . . . .	"	121	381	Lions, Large and Small ( <i>T'ai Shih Hsiao Shih</i> ) . . . . .	"	128
367	Artist's Water-dish ( <i>Pi Hsi</i> ) . . . . .	"	123			"	
368	Bowl with Two Dragon-handles ( <i>Lung Erh Hsi</i> ) . . . . .	"	123	382	Water-receptacle ( <i>Shui Ch'eng</i> ) . . . . .	"	128



## LIST OF ILLUSTRATIONS

xi

## ILLUSTRATIONS IN THE TEXT—continued

NUMBER	TITLE	PERIOD	PAGE	NUMBER	TITLE	PERIOD	PAGE
386	Miniature Loving-cup ( <i>Chiu Pei</i> )	1368–1644	129	483	Two Cups with Covers ( <i>Kai Ch'a Wan</i> )	1736–1795	161
390	Pen-rest ( <i>Pi Ko</i> )	" "	130	484			
391	Ornamental Knob ( <i>Ting</i> )	" "	130	486	Figure of Longevity Divinity ( <i>Shou Lao</i> )	" "	162
392	Ornamental Knob ( <i>Ting</i> )	" "	131	488	Bowl ( <i>Wan</i> )	" "	162
394	Incense-burner ( <i>Hsiang Lu</i> )	" "	131	489	Cup with Cover ( <i>Kai Wan</i> )	" "	163
397	Flower Vase ( <i>Hua Ku</i> )	" "	132	491	Sceptre ( <i>Ju-i</i> )	" "	164
398	Paper-weight ( <i>Shu Chên</i> )	" "	132	496	Bowl ( <i>Wan</i> )	" "	165
399	Grotesque Monster with Vase ( <i>Shou Kai P'ing</i> )	" "	133	497	Vase ( <i>P'ing</i> )	" "	165
400	Miniature Flower Vase ( <i>Hsiao Hua Ku</i> )	" "	133	499	Altar Set ( <i>San Shê</i> )	"	166
401	Wine-cup ( <i>Chiu Pei</i> )	" "	133	500			
403	Jade Chains ( <i>Yü Lien-tzu</i> )	"	134	501	Snuff-bottle ( <i>Pi-yen Hu</i> )	"	167
404				502			
406	Water-receptacle ( <i>Hsi-tzû</i> )	" "	135	503	Small Comb ( <i>Chieh-tzû</i> )	" "	167
407	Water-receptacle ( <i>Shui Ch'êng</i> )	" "	135	506	Pendant ( <i>P'ai-tzû</i> )	" "	168
409	Writer's Hand-rest ( <i>Nuan Shou</i> )	" "	136	507	Girdle-clasp ( <i>Tai Kou</i> )	" "	168
410	Double Flower Vase ( <i>Hua Ch'a</i> )	" "	136	510	Plume-holder ( <i>Mao Kuan</i> )	" "	169
411	Temple Figure ( <i>Yü Jên</i> )	" "	137	516	Artist's Brush-holder ( <i>Pi Tung</i> )	" "	170
417	A Dove ( <i>Ko-tzû</i> )	" "	138	518	Round Screen ( <i>Yuan Ch'a P'ing</i> )	" "	171
421	Fish Gong ( <i>Yü Ch'ing</i> )	1662–1722	139	519	Artist's Water-dish ( <i>Hsi-tzû</i> )	" "	171
425	Double-gourd Pallet ( <i>Hu-lu Yen-tai</i> )	" "	140	523	Sceptre ( <i>Ju-i</i> )	" "	172
426	Baby Pillow ( <i>Wa-ia Chên</i> )	" "	141	531	Taoist Mountain Scene ( <i>Shou Shan</i> )	" "	175
427	Covered Bowl ( <i>Kai Wan</i> )	" "	141	534	Vase ( <i>Tsun</i> )	" "	175
429	Snuff-bottle ( <i>Pi-yen Hu</i> )	" "	142	535	Vase ( <i>P'ing</i> )	" "	176
430	Quadrangular Vase ( <i>Fang P'ing</i> )	" "	142	537	Altar Set ( <i>San Shê</i> )	"	176
431	Artist's Water-holder ( <i>Hsi-tzû</i> )	" "	143	538			
435	Double-dragon Vase ( <i>Shuang Lung P'ing</i> )	" "	143	539	Magnolia Vase ( <i>Yu-lan P'ing</i> )	"	177
438	Water-buffalo ( <i>Shui Niu</i> )	" "	144	541			
439	Beaker-shaped Vase ( <i>Hua Ku</i> )	" "	144	544	Cup with Cover ( <i>Kai Wan</i> )	" "	177
441	Double-gourd Dish ( <i>Hu-lu Hsi</i> )	" "	145	546	Paper-weight ( <i>Chên Chih</i> )	" "	178
442	Flower Vase ( <i>Hua Ch'a</i> )	" "	145	547	Altar Set ( <i>Ssü Shê</i> )	"	178
443	Double-phenix Vase ( <i>Shuang Fêng P'ing</i> )	" "	146	548			
444	Elephant carrying Vase ( <i>T'ao P'ing Hsiang</i> )	" "	146	549	Incense-burner with Cover ( <i>Kai Lu</i> )	"	179
445	Flat Beaker ( <i>Pien Hua Ku</i> )	" "	147	550			
446	Sceptre ( <i>Ju-i</i> )	" "	148	551	Ornamental Plaque ( <i>Ch'a P'ing</i> )	" "	180
447	Hexagonal Beaker ( <i>Hua Ku</i> )	" "	148	553	Lions ( <i>Shih-tzû</i> )	" "	180
448	Beaker-shaped Vase ( <i>Hua Ku</i> )	" "	148	557	Girdle-plaque ( <i>Tai Pan</i> )	" "	181
450	Lotus Vase ( <i>Lien-hua P'ing</i> )	" "	149	559	Pendant ( <i>P'ai-tzû</i> )	" "	181
451	Artist's Water-holder ( <i>Shui Ch'êng</i> )	" "	150	561	Wheels ( <i>Lun</i> )	"	182
452	Pair of Bowls ( <i>Wan</i> )	"	150	566			
453				567	Paper-weight ( <i>Shu Chên</i> )	"	184
454	Incense-burner ( <i>Kai Wan Lu</i> )	" "	151	575			
455	Artist's Water-holder ( <i>Hsi-tzû</i> )	" "	151	577	Ornament ( <i>P'ai-tzû</i> )	" "	184
456	Miniature Vase ( <i>Hua Ch'a</i> )	" "	151	578	Amulet ( <i>P'ai-tzû</i> )	" "	185
457	Flower Vase ( <i>Hua P'ing</i> )	" "	152	580	Screen ( <i>Ch'a P'ing</i> )	" "	185
458	Figure of Longevity Deity ( <i>Shou Lao</i> )	" "	152	582	Round Bowl and Cover ( <i>Yuan Kai Wan</i> )	" "	187
459	Archaic Libation-cup ( <i>Ku Ch'ieh</i> )	" "	153	583	Flower Vase ( <i>Hua Ch'a</i> )	" "	187
460	Double Fish-dragon Vase ( <i>Shuang Yü-lung P'ing</i> )	" "	153	584	Vase with Cover ( <i>P'ing</i> )	" "	187
461	Image of Buddha ( <i>Fo Hsiang</i> )	" "	154	585	Bowl with Cover ( <i>Kai Wan</i> )	" "	188
463	A Duck ( <i>Yu-tzû</i> )	" "	154	586	Screen ( <i>Ch'a P'ing</i> )	" "	188
464	Double-dragon Seal ( <i>Shuang Lung Yin</i> )	" "	155	587	Water-receptacle ( <i>Hsi-tzû</i> )	" "	189
466	Seal Casket ( <i>Yin Ho</i> )	" "	156	588	Vase or Bottle ( <i>P'ing</i> )	" "	189
467	Mountain Scene ( <i>Shan-tzû</i> )	" "	156	589	Flower Vase ( <i>Hua Ch'a</i> )	" "	189
468	Lotus-leaf Dish ( <i>Ho-yeh Hsi-tzû</i> )	" "	157	590	Incense-burner with Cover ( <i>Kai Lu</i> )	" "	190
469	Round Screen ( <i>Yuan Ch'a P'ing</i> )	" "	157	591	Wine-pitcher ( <i>Chu-tzû</i> )	" "	190
473	Oval Vase with Cover ( <i>Kai P'ing</i> )	1723–1735	158	592	Artist's Dish ( <i>Hsi-tzû</i> )	" "	191
475	Girdle-buckle ( <i>Tai Kou</i> )	" "	159	593	Artist's Dish ( <i>Pi Hsi</i> )	" "	191
476	Water-jar ( <i>Ling-chih Kuan</i> )	" "	159	594	Altar Set ( <i>Lu, Ho, P'ing</i> )	"	192
				595			
				596	Bowl with Two Handles ( <i>Hsi-tzû</i> )	"	192
				597			
				600	Marriage Wine-cup ( <i>Ho-huan Pei</i> )	" "	193



## LIST OF ILLUSTRATIONS

## ILLUSTRATIONS IN THE TEXT—continued

NUMBER	TITLE	PERIOD	PAGE	NUMBER	TITLE	PERIOD	PAGE
602	Large Bowl with Two Handles ( <i>Ta Hsi-tzū</i> ) . . . . .	1736-1795	194	680	Sacrificial Tripod ( <i>San Hsi Ting</i> ) . . . . .	1736-1795	224
603	Beaker-shaped Vase ( <i>Hua Ku</i> ) . . . . .	" "	194	681	Screens ( <i>Ch'a P'ing</i> ) . . . . .	" "	224
604	Pilgrim's Bottle ( <i>Pei Hu P'ing</i> ) . . . . .	" "	195	682	Artist's Brush-holder ( <i>Pi T'ung</i> ) . . . . .	" "	225
605	Vase ( <i>P'ing</i> ) with Cover ( <i>Kai</i> ) . . . . .	" "	195	684	Large Longevity Mountain ( <i>Ta Shou Shan</i> ) . . . . .	" "	226
608	Pilgrim's Bottle ( <i>Pei Hu P'ing</i> ) . . . . .	" "	196	685	Artist's Brush-holder ( <i>Pi T'ung</i> ) . . . . .	" "	227
609	Artist's Brush-holder ( <i>Pi T'ung</i> ) . . . . .	" "	197	686	Bowl with Two Handles ( <i>Ta Yuan Hsi-tzū</i> ) . . . . .	" "	227
610	Buddhist Figures ( <i>Lo-han</i> ) . . . . .	" "	197	687	Bowl with Two Handles ( <i>Ta Yuan Hsi-tzū</i> ) . . . . .	" "	228
611	Carved Boulder ( <i>Shan-tzū</i> ) . . . . .	" "	198	688	Round Screen ( <i>Yuan Ch'a P'ing</i> ) . . . . .	" "	229
612	Vase ( <i>P'ing</i> ) . . . . .	" "	198	689	Large Fish-bowl ( <i>Ta Yü Kang</i> ) . . . . .	" "	231
613	Double-cylinder Vase ( <i>Shuang Kuan P'ing</i> ) . . . . .	" "	198	690	Large Oval Basin ( <i>Ta Hsi</i> ) . . . . .	" "	233
616	Taoist Figure ( <i>Shên Hsien</i> ) . . . . .	" "	199	702	Incense-burner ( <i>Kai Lu</i> ) . . . . .	1796-1820	235
617	Oval Screen ( <i>Ch'a P'ing</i> ) . . . . .	" "	200	703	Fish-bowl ( <i>Yü Kang</i> ) . . . . .	" "	235
618	Small Quadrangular Vase ( <i>Fei-chi P'ing</i> ) . . . . .	" "	200	704	Beaker of Ancient Bronze Design ( <i>Ku T'ung Hua Ku</i> ) . . . . .	" "	235
619	Dragon with Young ( <i>Ch'ih Lung Hsün Tzū</i> ) . . . . .	" "	201	705	Large Bowl with Cover ( <i>Ta Kai Wan</i> ) . . . . .	1796-1850	236
620	Water-receptacle ( <i>Shui Ch'êng</i> ) . . . . .	" "	201	730	Twelve Animals (or Signs) of the Zodiac ( <i>Shih-êrh-Chin</i> ) . . . . .	1796-1875	242
621	Vase with Cover ( <i>Kai P'ing</i> ) . . . . .	" "	201	735	Imperial Jade-handled Knives ( <i>Huang Yü Tao</i> ) . . . . .	1736-1795	244
623	Artist's Brush-holder ( <i>Pi T'ung</i> ) . . . . .	" "	202	739	Elephant carrying Precious Vase ( <i>T'ao Pao P'ing Hsiang</i> ) . . . . .	" "	245
624	Quadrangular Vase ( <i>Fang P'ing</i> ) . . . . .	" "	203	740	Horse carrying Bundle of Books ( <i>T'ao Shu Ma</i> ) . . . . .	" "	245
625	Taoist Divinity ( <i>Hsi Wang Mu</i> ) . . . . .	" "	204	741	Small Brush-holder ( <i>Hsiao Tung</i> ) . . . . .	" "	245
626	Jade Frame with Mirror . . . . .	" "	204	742	Dish of Artificial Plants ( <i>P'ên Ching</i> ) . . . . .	" "	246
627	Incense-burner ( <i>Hsiang Lu</i> ) . . . . .	" "	205	743	Pair of Dishes with Plants ( <i>P'ên Ching</i> ) . . . . .	" "	246
631	Two Cups and Cover ( <i>Kai Wan</i> ) . . . . .	" "	206	744	Bowl . . . . .	XVIIth Century	248
632	Tripod Incense-burner ( <i>Ting Lu</i> ) . . . . .	" "	206	756	Bowl . . . . .	" "	249
634	Vase with Cover ( <i>Kai P'ing</i> ) . . . . .	" "	207	757	Floral Vase . . . . .	" (?)	249
635	Two Perfume-receptacles ( <i>Hsiang K'ou-tai</i> ) . . . . .	" "	207	760	Ring-box . . . . .	" "	250
637	Ceremonial Axe ( <i>Fu</i> ) . . . . .	" "	208	761	Shallow Bowl . . . . .	" "	250
638	Screen ( <i>Ch'a P'ing</i> ) . . . . .	" "	208	762	Chinese Inscription on Chrysanthemum Bowl . . . . .	" "	250
639	Bell ( <i>Chung</i> ) . . . . .	" "	209	764	Mirror-frame . . . . .	" "	251
640	Figure of a Buddhist Arhat ( <i>Lo-han</i> ) . . . . .	" "	209	765	Sword-guard . . . . .	" "	251
643	Large Round Dish ( <i>Ta P'an</i> ) . . . . .	" "	210	773	Jewelled Dagger-handle . . . . .	" "	254
644	Musical Stone ( <i>Chi Ch'ing</i> ) . . . . .	" "	211	774	" Plate . . . . .	" "	254
645	Round Box ( <i>Yuan Ho</i> ) . . . . .	" "	212	775	" Jar and Cover . . . . .	" "	254
647	Water-dish ( <i>Pi Hsi</i> ) . . . . .	" "	212	776	" Box . . . . .	" "	255
653	Snuff-bottle ( <i>Pi-yen Hu</i> ) . . . . .	" "	214	782	" Mirror . . . . .	XVIIIth Century	257
655	Paper-weight ( <i>Shu Chên</i> ) . . . . .	" "	215	783	" Armlet . . . . .	" "	257
656	Pair of Incense-burners ( <i>Kai Wan Lu</i> ) . . . . .	" "	216	784	" Sceptre . . . . .	" "	257
657	Vase with Cover ( <i>Kai P'ing</i> ) . . . . .	" "	216	785	Dagger-handle inlaid with Silver . . . . .	" "	258
658	"Longevity Mountain" ( <i>Shou Shan</i> ) . . . . .	" "	216	786	Inlaid Box and Cover . . . . .	" "	258
659	Vase ( <i>Pei Hu P'ing</i> ) . . . . .	" "	217	789	Jewelled Pendant . . . . .	XIXth Century	259
664	Round Dish ( <i>Hsi-tzū</i> ) . . . . .	" "	218	791	" Thumb-ring . . . . .	" "	259
665	Tripod Incense-burner ( <i>Ting Lu</i> ) . . . . .	" "	218	794	" Clasp . . . . .	" "	260
666	Incense-burner ( <i>Hsiang Lu</i> ) . . . . .	" "	219	795	" Vase . . . . .	" "	260
667	Vase ( <i>Kuan</i> ) . . . . .	" "	219	797	Screen ( <i>Ch'a P'ing</i> ) . . . . .	1802-1819	262
668	Vase ( <i>P'ing</i> ) . . . . .	" "	220	798	Ink-pallet and Water-horn . . . . .	" "	263
669	Pilgrim's Bottle ( <i>Pei Hu P'ing</i> ) . . . . .	" "	220	799	Statuette of Venus de Milo . . . . .	1897	264
670	Bowl with Two Handles ( <i>Yuan Hsi</i> ) . . . . .	" "	221	801	Round Bonbonnière . . . . .	1898	265
671	Incense-burner Set ( <i>Lu, Ho, P'ing</i> ) . . . . .	" "	221	802	Paper-knife . . . . .	1890	265
672	Incense-burner ( <i>Tun Lu</i> ) . . . . .	" "	222	812	Pendant . . . . .	XIXth Century	267
673	Incense-burner Set ( <i>Lu, P'ing, Ho</i> ) . . . . .	" "	222				



# CATALOGUE

## INTRODUCTION

THE history, mineralogy, archæology, and general properties of jade, its several varieties, the principal sources of supply, and the methods of working it into ornamental and artistic forms in the countries where it has been most appreciated for these purposes, have been discussed at some length in the first volume. A general account of the objects of worked jade in the Collection, accompanied by notes on the origin of the forms, designs, and principal motives of decoration adopted by the glyptic artists in carving the stone, has also been attempted as the localities where jade has been sculptured have been reviewed. The work has been based, throughout, upon actual materials supplied by the Collection, a detailed description of which has been reserved for the present volume.

The Collection has been arranged and catalogued under three main headings :

1. Mineralogical
2. Archæological
3. Art Objects

In the Catalogue which follows, the descriptions of the individual pieces, whether mineralogical, archæological, or objects of art, have been framed, for the sake of uniformity, upon a definite scheme drawn up beforehand. The heading of this scheme, which gives the name of the object and its number in the Catalogue, is followed, on the right, by the name of the country from which it comes. Next come the *dimension* in inches and centimetres, and the *weight* in ounces and grammes. The next line gives the *specific gravity*, which has been scientifically tested in every case, with very few exceptions, where the mounting of the piece has prevented its being taken, or where jade forms only a portion of the object, as in some of the Chinese flowering plants included in Nos. 742-754; the *hardness*, calculated upon a scale in which the diamond figures as 10; and the *material*, whether jadeite, chloromelanite, or nephrite. The *color* follows next in order, being carefully described in each case. The description proper which succeeds refers to the form and motives of decoration, the use for which the object is intended, its historic and artistic association, if any, and ends generally with a definition, by an expert, of the structure of the material and of any physical peculiarities which may distinguish it under reflected or transmitted light.







# CATALOGUE







## MINERALOGICAL SYNOPSIS

THE mineralogical specimens in the Collection, 228 in number, have been obtained from many different sources in all parts of the world. Every continent except Africa is represented in the various localities. The list of countries is to a certain extent tentative, as indicated by several notes of interrogation, which are attached to their names when it has been found to be impossible to trace out the original source of the specimens. The mineralogical series includes not only fragments of crude jade from mines or quarries, and boulders or pebbles from the beds of jade-producing rivers, but also pieces removed from objects of worked jade which have been divided into sections for chemical analysis and other researches.

China and India are the great jade-using countries, but we have no certain knowledge of any jade-producing site in the present day either in India or in any part of China proper. The province of Chinese Turkistan is still, as it always has been, the chief source of production of the nephrite worked in India as well as in China, and the province of Burma remains the chief source of production of jadeite, so that it would almost seem better, for the present, to refer all Indian and Chinese worked objects of nephrite to Eastern Turkistan, and all objects of which the material is jadeite to Burma. If the limits of Upper Burma could be stretched to include the adjoining Chinese province of Yunnan and the southeastern corner of Tibet, the arrangement would, perhaps, be scientifically correct.

*Burma* is well represented here in the specimens numbered 1-22, all of which are of jadeite. Nos. 23-40 include a number of crude fragments and partly worked pieces of jadeite which were purchased from a Chinese Mohammedan dealer at Shanghai as specimens of *Yunnan* jade. Nos. 41-45 are five pieces cut from various objects of jadeite worked in *China*, the material of which may possibly have come originally from Burma. Nos. 46-57 are twelve pieces of jadeite said to have come from *Tibet*, the last of which, a mixture of jadeite, plagioclase, and nephelite, has given rise to the interesting discussions in the first volume on the "Origin of Jadeite," by Professor L. V. Pirsson, and on the "Relation of Jadeite and Nephrite," by Professor J. P. Iddings. No. 58 is a thin slab of very dark material contributed by Professor Damour of Paris, who labelled it "jadeite passing into chloromelanite," the origin of which is unknown, but presumed to be Burma, as it is said to have been shipped to France from Rangoon.

*India* is represented by one piece only, No. 59, and that with a query attached, for the reasons that have been already indicated. It is part of the top of a sword-scabbard, of Indian workmanship, composed of very dark sage-green nephrite, a material not uncommon in worked jade of India, the original source of which has not yet been discovered.

*Chinese Turkistan* is richly represented by Nos. 60-79, some of the numbers containing many pieces, all being of nephrite, embracing a wide variety of colors ranging from white with faintest tinge of gray or green, through many intermediate shades of green, darkening to inky black, as in No. 79. Some of the specimens were actually obtained *in situ* by recent travellers: Nos. 61-63 by Svén Hedin, No. 64 by H. von Schlegelweit, and Nos. 70 and 75 by Professor von Muschketow from the valley of the Raskam Daria in the Eastern Pamirs. No. 77 is a fragment of an interesting historical monument, the great monolith of nephrite on the tomb of Tamerlane at Samarkand, which is dated 1389. Most of the pieces come from the river-beds of Khotan and Yarkand, while some are from Barkul and Manas, the principal sources of the typical dark-green jade (*pi-yü*) of China.



The next heading in the table, "*China*; probably, or possibly, *Turkistan*," includes a number of pieces, Nos. 80-100, of Chinese provenance, attributed to Chinese Turkistan for hypothetical reasons. The first five specimens are fragments of carved objects from which pieces have been cut off for chemical analysis. The next four, Nos. 85-88, are water-worn pebbles acquired in Shanghai from the Mohammedan dealer Ma Hung-sin, who said that they had been picked up in the bed of the Liu-yang River in the Chinese province of Hu-nan. The following eight, Nos. 89-96, from the same source, were attributed by the dealer to the Chinese province of Ho-nan, but we cannot be perfectly satisfied that he was correct until jade is reported to be found *in situ* somewhere in this province. The same may be said of the remaining pieces, Nos. 97-100, included under this heading; they all come from China, and represent several shades of green nephrite, the original source of which is, so far, unknown.

The thirty-three specimens of nephrite which so abundantly represent *Siberia* come under a different category, as the locality of each is perfectly well known. This is due to the labors of two scientific expeditions sent from St. Petersburg to investigate the occurrence of jade *in situ*, the first of which was despatched in the middle of the nineteenth century, headed by Permikin, to obtain material for the imperial lapidary workshops at Peterhof; the second in 1896, under Jaczewski, to find a monolith for the sarcophagus of the late Czar Alexander III. Professor L. von Jaczewski has written a special account of his explorations for this work, which is published in the first volume, and he has also contributed some of the specimens in the above list.

*Europe* is also remarkably well illustrated by mineralogical specimens from several localities, amply sufficient in themselves to solve the "jade question" of ethnologists, which depended mainly on the negative premise that jade had not been found *in situ* in Europe. Could any more convincing proof of its occurrence be desired than the mammoth block of crude nephrite, No. 134, which originally weighed 2140 kilogrammes? This block was brought over from the village of Jordansmühl in Silesia, and it has been thoroughly investigated by chemical analysis, by the microscope, and by impact, compression, and tensile tests. There are nine more specimens (Nos. 135-143) of crude jade from the same locality; and four (Nos. 144-147) from Reichenstein, also in Silesia, where jade was discovered *in situ* by H. Traube in the year 1887, as described in his paper which has been quoted in the first volume: it was found by him among the material hauled up from the arsenic-mines, and the fragment of olive-green color, No. 147, is thickly sprinkled with crystals of arsenopyrite. Jade had previously been found in Europe only in the form of erratic boulders, a fragment of one of which is No. 148 in the Collection, which was cut from a smooth polished block of olive-green nephrite found by Breithaupt in 1815 in a peat-bog at Schwemsal, near Düben, in Prussian Saxony. The two other pieces in the list are a fragment of light sage-green jadeite, No. 149, cut from a prehistoric axe found in a forest in Hungary, and which is now in the Imperial Museum, Vienna; and a fragment of olive-green nephrite, No. 150, dug up from the remains of one of the ancient Swiss pile-dwellings in Lake Neuchâtel.

*North America* is represented by a pebble, No. 151, of black nephrite flecked with gray, from the State of Washington, and a spinach-green pebble, No. 152, from British Columbia, both found by the Jesup North Pacific Expedition of 1897; and by six specimens, Nos. 153-158, of crude nephrite from Alaska. Two of the pieces which come from the Jade Mountain in Alaska were discovered there by Lieutenant Stoney in the year 1884. It may be noted that No. 157, a large water-worn pebble of mottled spinach-green nephrite, comes from Canada, not far from the Alaskan frontier, having been found in Sulphur Creek, a tributary of Indian River, about forty miles from Dawson, the chief town of the Yukon district and the centre of the mining industry in the Klondike region.

The remaining pieces in the list, Nos. 159-167, come from *New Zealand*, and are types of the several shades of nephrite found there, passing from light green with mottling of greenish-gray tinged with yellow, seaweed-green, and richly mottled dark greens of translucent structure, through spinach-green, pear-leaf and ivy-leaf greens, to black, the deeper shades being due to abundant inclusions of chromic iron. Certain New Zealand jades are distinguished for their rich, deep tones of coloring and for the fine unctuous lustre of their surface when polished.



# CATALOGUE

1

## FRAGMENT

UPPER BURMA

Dimensions:  $2.03 \times 1.81 \times .41$  inches.  $5.2 \times 2 \times 1.1$  centimetres. Weight: .547 ounce. 15.504 grammes  
Specific gravity: 3.332; hardness: 7.0. *Jadeite*  
Color: Creamy white with a few faint spots of green

A small flat section of a mined fragment, polished on one side. This is a portion of one of the specimens of crude jade collected by Dr. Fritz Noetling on the occasion of his visit in 1892 to the jade-mines of Tammaw, Upper Burma, and transferred by him to the collection of the Geological Survey of India. Some of them passed thence to Dr. Max Bauer of Marburg in Hessen, Germany, for microscopical examination and chemical analysis, and from one of these this small section was removed and presented to the Collection by him. It is a fine-grained, creamy-white mass, relieved by a few very indistinct spots of green, which Bauer found gave a strong chromium reaction before the blowpipe. The grains are not uniform in size, and are frequently so minute as to be indistinguishable by the naked eye.

When examined microscopically by Dr. Bauer, he found the ground-mass to be perfectly pure jadeite, composed of confused irregular prisms, varying in size, their length and breadth being in some cases identical and nearly equal to one millimetre. As a rule, however, the prisms were elongated, their length greatly exceeding their breadth. In no case did he observe a breadth of less than 0.1 millimetre. The prisms were colorless, except at the boundary between two individuals or along small cracks. Twinned prisms were frequently found bent

throughout and fringed at the ends. It appears that the twins are most numerous in the portions that have suffered the greatest crushing, and are absent where the effects of pressure are not well marked. We must conclude, therefore, that under favorable conditions crushing and pressure would produce in the jadeite a rearrangement of the molecules into twins similar to that observed in calcite. This, however, must have happened only in rare cases, for it had not hitherto been observed. The twinning-plane, which in this case must be looked upon as a fault-plane, is distinctly seen to be a transverse plane, corresponding to that otherwise observed as a twinning-plane in pyroxene.

An analysis by Dr. Busz gave the following results:

Silica . . . . .	58.46
Alumina . . . . .	25.75
Soda . . . . .	13.93
Lime . . . . .	.63
Magnesia . . . . .	.34
Loss . . . . .	1.00
	<hr/> 100.11

2

## THICK SECTION

UPPER BURMA

Dimensions:  $9.28 \times 4.75 \times 1.56$  inches.  $23.5 \times 12.0 \times 3.9$  centimetres. Weight: 4 pounds 11.376 ounces. 2136.90 grammes  
Specific gravity: 3.3092; hardness: 7.0. *Jadeite*  
Color: An intermingling of irregular patches and veins of lavender, white, light lilac, yellow, light yellowish-brown, and various shades of green varying from light emerald to a very dark green

A thick flat section with two parallel faces and two parallel sides, sawn and fractured from a large block with a weathered water-worn end, with four parallel markings which suggest an original slickenside.

The material is rather fine-grained, but a few crystals of medium coarseness can be made out by the naked eye. Two polished spots on the weathered end show emerald-green patches of great beauty.



## INVESTIGATIONS AND STUDIES IN JADE

## SMALL ANGULAR FRAGMENT

UPPER BURMA

Dimensions:  $4.31 \times 1.5 \times .69$  inches.  $10.9 \times 3.7 \times 1.7$  centimetres. Weight: 4.416 ounces. 125.200 grammes  
 Specific gravity: 3.1878; hardness: 7.0. *Jadeite*  
 Color: Large light-gray patches surrounded by pale-green

An angular fragment with one polished face and showing an old, much-weathered fracture on the other. The material is faintly translucent, finely granular, and compact, with a crystalline structure which can be readily made out by the eye, and is quite pronounced on the broken surface.

## FRAGMENT OF BOULDER

UPPER BURMA

Dimensions:  $3.09 \times 2.31 \times 2.0$  inches.  $8.0 \times 5.8 \times 5.1$  centimetres. Weight: 10.287 ounces. 291.645 grammes  
 Specific gravity: 3.2176; hardness: 7.0. *Jadeite*  
 Color: Light gray with faint mottlings of light green and an exterior weathering of dead-oak-leaf color

Fragment of much-weathered boulder. The material is translucent and of coarsely crystalline structure, the outlines of the pyroxene crystals being readily discernible on the broken surfaces. On the cut surfaces the reflections resemble the frosted appearance of galvanized iron.

On the weather-exposed surface the iron in the material has changed the entire exterior to a rich dead-oak-leaf color to a depth of one half to two millimetres. On this surface the interstitial minerals have weathered out from the jadeite, leaving the pyroxene crystals entirely isolated.

Under the microscope the thin sections made from this specimen exhibit most plainly the true character of the pyroxene mineral or jadeite.

The rock is seen to consist of an aggregation of irregularly shaped crystals of nearly colorless pyroxene with many cracks. The cracks follow the outlines of the crystals, the prismatic cleavage, and a transverse parting, probably basal. In places the pyroxene crystals become long prisms, and lie at all angles in the section; sometimes being grouped in fan-like aggregates or bundles. In several places they lie embedded in a colorless mineral, which acts as a matrix for the pyroxene crystals. In these places they have sharply defined crystal forms.

The long prisms are well developed in the prismatic zone, and have the orthopinacoid (100) and unit prisms (110); and sometimes the clinopinacoid (010) less pronounced. Thus they are sometimes flattened parallel to the orthopinacoid. Terminal planes were not observed. Cross-sections exhibit distinct prismatic cleavage. The form of the crystals is similar to that of aegirite, from which this pyroxene differs by being colorless in thin sections. Cross-sections exhibit the emergence of an optic axis when examined in convergent polarized light. Longitudinal sections yield a maximum angle of extinction of about thirty-five degrees. Hence the angle between the optic axes is about seventy degrees. Longitudinal sections that have

been cut nearly perpendicular to an optic axis exhibit the plane of the optic axes parallel to the side of the prism, indicating a monosymmetric crystal. One of these crystal sections also exhibits narrow lamellæ parallel to the sides of the prism, which appear to be the result of twinning, and a transverse parting nearly at right angles to the prism. The colorless mineral acts as a cement or matrix for the jadeite prisms, and appears to consist of relatively large individuals, not an aggregate of small ones. It has a low index of refraction and very low double refractory. In places it is twinned in polysynthetic lamellæ making ninety degrees with one another. The exact nature of this mineral is not determinable by optical means alone. It is possibly analcite. This is further indicated by the chemical analysis given below.

This is one of the specimens that were tested for resistance to compression by Professor Woolson of Columbia University. A cube with an area of 0.763 square inch and measuring  $0.930 \times 0.946 \times 0.807$  inch failed suddenly, without report, at a maximum load of 41,987 pounds, showing an ultimate strength of 55,000 pounds per square inch, the lowest but one of the four jadeites tested.

An analysis, with reduction by Penfield, showed the composition of the specimen to be:

	Diopside CaMg(SiO <sub>3</sub> ) <sub>2</sub>	Analcite NaAl(SiO <sub>3</sub> ) <sub>2</sub> ·H <sub>2</sub> O	Jadeite NaAl(SiO <sub>3</sub> ) <sub>2</sub>	Jadeite Cal. to 100 %	Jadeite Theory
Silica . .	58.41	1.50	15.84	41.07	58.37
Alumina . .	24.64		6.73	17.91	26.05
Ferrie oxide . .	.67			.67	
Magnesia . .	1.24	.52		.72	
Lime . .	1.43	.67		.76	
Soda . .	12.76		4.09	8.67	15.58
Potash . .	58			.58	
Loss . .	1.19		1.19		
	100.92	2.69	27.85	70.38	100.00

## FLAT ANGULAR FRAGMENT

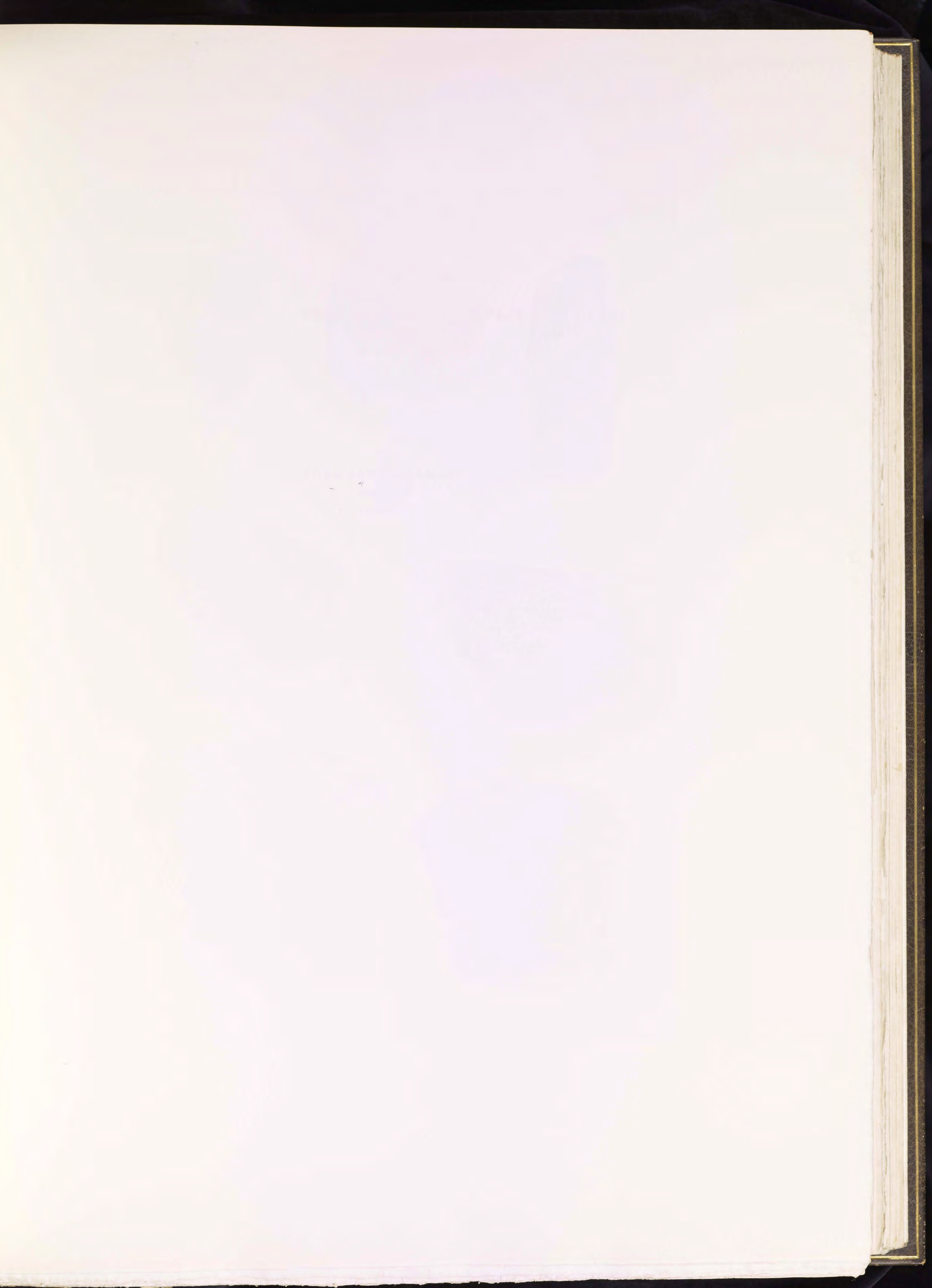
UPPER BURMA

Dimensions:  $3.06 \times 1.5 \times .81$  inches.  $7.7 \times 3.7 \times 1.8$  centimetres. Weight: 2.693 ounces. 76.348 grammes  
 Specific gravity: 3.3237; hardness: 7.0. *Jadeite*  
 Color: Very light gray with mottlings of pale sea-green

A small angular fragment, polished on one face, and exhibiting an old fracture on the other. The material is translucent and coarsely granular, and has every appearance of having been detached from the same block as No. 6. On the fractured surfaces the large irregular crystals are quite isolated and pronounced, single crystals measuring four millimetres in length and two in width. On cleavage faces a bright, almost pearly lustre, somewhat similar to that seen on corun-

dum cleavage, is visible. On the polished surface the coarsely crystalline structure is readily made out by the eye. The polishing process has evidently ground away what are apparently softer parts, or perhaps the junctures of the crystals, so that when light is allowed to fall obliquely on it the surface presents the appearance of an irregular mosaic.







No. 120  
PART OF THIN SLAB  
Nephrite  
Siberia

No. 71  
ROUGH FRAGMENT  
Nephrite  
Turkistan

No. 150  
FRAGMENT  
Nephrite  
Lake Neuchâtel, Switzerland

No. 14  
SMALL FRAGMENT  
Jadeite  
Burma

No. 104  
FRAGMENT OF BOULDER  
Nephrite  
Siberia

No. 4  
FRAGMENT OF BOULDER  
Jadeite  
Upper Burma

No. 141  
FRAGMENT  
Nephrite  
Jordansmühl, Silesia

No. 97  
FRAGMENT OF BOULDER  
Nephrite  
Probably Turkistan











6

## CUT SECTION

UPPER BURMA

Dimensions:  $7.75 \times 4.94 \times 1.81$  inches.  $19.6 \times 11.9 \times 4.5$  centimetres. Weight: 3 pounds 6.991 ounces. 1559.000 grammes  
 Specific gravity: 3.3270; hardness: 7.0. *Jadeite*  
 Color: Light gray with mottlings of pale sea-green

A thick lozenge-shaped section from the exterior of a weathered mass. At one end, which has been stained with brown (apparently due to hydrous oxide of iron) and is much weathered, the individual crystals are isolated and distinct, and lie scattered irregularly over

the surface. On the cut surfaces the crystals are very large and pronounced, one crystal measuring four millimetres across and the same in length, imparting to the piece the appearance of galvanized iron.

7

## RECTANGULAR BLOCK

UPPER BURMA

Dimensions:  $2.56 \times 2.0 \times 1.5$  inches.  $6.5 \times 5.0 \times 3.8$  centimetres. Weight: 12.207 ounces. 347.943 grammes  
 Specific gravity: 3.3122; hardness: 7.0. *Jadeite*  
 Color: Light gray with delicate mottlings of light sea-green, seamed with greenish-black, and marked at one end with a large patch of dark sea-green

A rectangular block from which many specimens for microscopical examination, chemical analysis, and strength tests have been removed by sawing. It has been polished on two sides, and shows a beautifully translucent and highly crystalline material.

Microscopically the specimen is found to be a comparatively coarse-grained aggregation of jadeite crystals with small spots of clouded material, the nature of which is indeterminable, but which presumably indicate the beginning of decomposition. The grains or anhedral of jadeite are irregular in shape,—that is, allotriomorphic,—and are of various sizes. In some cases the prismatic cleavage is distinct. Areas that appear as one crystal often prove to be compounded of many individuals when seen between crossed nicols. The variations in grain and the curving of some cleavage lines, the mottling of the larger crystals when viewed between crossed nicols (indicating strains and the first stages of granulation), together with the streaked arrangement of the smaller anhedral, prove that the rock has been subject to forces that have crushed it to some extent. In places there are patches of a colorless mineral with lower index of refraction than that of jadeite, and with the double refraction and polysynthetic twinning of plagioclase feldspar. It acts as a matrix in which small prisms of jadeite lie at all positions, and against which the jadeite is automorphic. It exhibits no signs of alteration, whether of decomposition or of crushing. These facts point to its being of later origin than the dynamic metamorphism of the rock. But the areas of feldspar are so small that the evidence is not conclusive, and they may possibly have been formed when the jadeite crystallized. They certainly formed after the adjacent and enclosed jadeite crystallized. The feldspar would have the composition  $\text{Ab}_3\text{An}_1$ ; that is, oligoclase-albite.

Material taken from the block was subjected to three different resistance tests: impact, compression, and tension.

In the impact tests four half-inch cubes were used. The average height of the first was 0.506 of an inch. Just 100 blows, or a final blow of 100,000 centimetre-grammes, were required to break it, the total energy expended being 5,050,000 centimetre-grammes.

The average height of the second cube was 0.5004 of an inch. It stood 103 blows, or a final blow of 103,000 centimetre-grammes, before breaking, the total energy expended being 5,356,000 centimetre-grammes.

The average height of the third cube was 0.584 of an inch. It stood 112 blows, or a final blow of 112,000 centimetre-grammes, the total energy expended being 6,328,000 centimetre-grammes.

The fourth cube had an average height of 0.503 of an inch. It stood no fewer than 131 blows, or a final blow of 131,000 centimetre-grammes, before breaking; a total expenditure of energy of 8,646,000 centimetre-grammes.

In the first and fourth of these tests the load was applied at right angles to the cleavage; in the other two, it was applied parallel to it. The averaged results are seen in the following table.

Number of cubes used	Direction of blow to cleavage	Number of blows to produce fracture	Energy of final blow in centimetre-grammes	Total energy expended in producing fracture in centimetre-grammes
2	Right angles	115.5	115,500	6,848,000
2	Parallel	107.5	107,500	5,842,000

In the compression tests two one-inch cubes were used, and in both instances the load was applied at right angles to the apparent bedding of the mineral. The first measured  $1.001 \times 1.013 \times 1.009$  inches, and had an area of 1.022 square inches. At a pressure of 94,000 pounds a small crack appeared on one corner, and when further increments of load had raised the pressure to 94,450 pounds the specimen suddenly failed with a sharp report, breaking into numerous small fragments. Ultimate strength per square inch, 92,416 pounds.

The second cube measured  $1.004 \times 1.021 \times 1.018$  inches, and had an area of 1.039 square inches. The specimen began to show white mottled spots on the exposed faces at 65,000 pounds; the first crack was observed when the applied load had reached 76,400 pounds; and at 79,180 pounds the cube failed suddenly with a sharp report, breaking into fine, somewhat prismatic pieces. The ultimate strength proved to be 76,208 pounds per square inch.

A specially shaped specimen cut from the same block was subjected in the same hydraulic testing-machine to a tensile test. It had an average thickness of 0.570 of an inch. This fractured square across at a pull of 1340 pounds, showing an ultimate tensile strength of 5056 pounds per square inch.

These tests are quite unique, and show the remarkable tenacity of the material.

Clarke's reduction of Dr. Foote's analysis is as follows:

	Jadeite	Albite	Anorthite	$\text{Al}_2\text{CaSiO}_6$
Silica . . .	58.58	51.25	3.25	.24
Alumina . . .	23.71	21.78	.92	.20
Ferric oxide .	.51			
Ferrous oxide	.24			
Magnesia . .	1.35			
Lime . . .	1.67		.11	.44
Soda . . .	13.80	13.24	.56	
Water . . .	.30			
	100.16	86.27	4.73	1.72
	R <sup>2</sup> SiO <sub>3</sub>	Unaccounted for	Abstract	
Silica . . .	3.37			
Alumina . . .			Jadeite . . .	86.27
Ferric oxide .	.51		Albite . . .	4.73
Ferrous oxide .	.15	.09	Anorthite . . .	.55
Magnesia . .	1.35		$\text{Al}_2\text{CaSiO}_6$ . . .	1.72
Lime . . .	1.12		R <sup>2</sup> SiO <sub>3</sub> . . .	5.99
Soda . . .			Unaccounted for .	.90
Water . . .	.30			
	5.99	.90		100.16



6

## INVESTIGATIONS AND STUDIES IN JADE

8

## SECTION OF A PEBBLE

UPPER BURMA

Dimensions:  $3.53 \times 2.0 \times 1.06$  inches.  $8.9 \times 5.1 \times 2.7$  centimetres. Weight: 4.428 ounces. 125.534 grammes  
 Specific gravity: 3.3311; hardness: 7.0. *Jadeite*  
 Color: Mottled greenish-gray, veined and seamed with reddish-brown and covered exteriorly with an intense reddish-brown "skin"

Section of a pebble with two polished facets, and a polished exterior "skin" of reddish ferruginous brown. The material is translucent and is made up of crystals of medium coarseness, which can readily be seen.

9

## HALF OF ROUGH PIECE

BURMA

Dimensions:  $2.62 \times 2.0 \times .69$  inches.  $6.6 \times 5.1 \times 1.7$  centimetres. Weight: 3.269 ounces. 92.6757 grammes  
 Specific gravity: 3.2477; hardness: 7.0. *Jadeite*  
 Color: Light greenish-gray; on the lower part lettuce-green with small light-gray veinings. The weathered surface shows very light grayish-brown incrustations

One half of a rough earth-covered piece of jadeite brought by sea from Burma to Shanghai and procured there for the Collection.

The crystalline structure of the specimen is medium compared with other Burmese jadeites. A portion of the piece toward one side is deep lettuce-green in color, mottled and broken up by fractures or the encircling greenish-gray magma. This green part has been polished on the edge, and shows the beauty of the coloring.

Microscopically the material is seen to be very pure jadeite consisting of irregularly shaped colorless anhedral grains varying in size from one millimetre in diameter to minute microscopic grains. There is a small amount of green mineral in fine-grained aggregations, somewhat fibrous. It is pleochroic from green to yellow, and has a lower refraction than jadeite.

10

## FRAGMENT

BURMA

Dimensions:  $3.69 \times 2.44 \times .5$  inches.  $9.3 \times 6.2 \times 1.2$  centimetres. Weight: 7.073 ounces. 200.520 grammes  
 Specific gravity: 3.2636; hardness: 7.0. *Jadeite*  
 Color: Very light grayish-green with veinings and cloudings of light lettuce-green and very dark green

Exterior section of a weathered mass of jadeite, distinctly veined with light lettuce-green, and a blackish-green which is probably the mineral szecheneite. The crystalline markings are elongated and slender.

The weathered surface is of a greenish-brown color with veins of emerald-green and the very dark green shown on the cut face of the piece.

11

## FRAGMENT

BURMA

Dimensions:  $3.25 \times .75 \times .62$  inches.  $8.2 \times 1.9 \times 1.5$  centimetres. Weight: 2.176 ounces. 61.692 grammes  
 Specific gravity: 3.2588; hardness: 7.0. *Jadeite*  
 Color: Light greenish-gray with pea-green cloudings and heavy markings of emerald-green and black

Section of a weathered block of coarsely crystalline jadeite from Burma. Three sides of the piece have been cut and polished, beautifully showing the emerald-green and blackish patches. The latter are probably szecheneite.

12

## SECTION OF BOULDER

UPPER BURMA

Dimensions:  $9.88 \times 5.0 \times 2.22$  inches.  $25.0 \times 12.6 \times 5.6$  centimetres. Weight: 5 pounds 10.197 ounces. 2557.090 grammes  
 Specific gravity: 3.2480; hardness: 7.0. *Jadeite*  
 Color: A mottling of grayish-green with veinings and patches of lettuce-green to a dark green almost black; and many stainings and veinings of light to dark brown

A thick slab cut from the exterior of a weathered and water-worn boulder much stained both exteriorly and throughout the mass with brown hydrous oxide of iron. The color is very varied. The structure of the material is of medium coarseness, and is well shown on the broken edges. In the pittings and depressions of the boulder surface there is a deposition of brown hydrous oxide of iron. At one side there is a small polished patch about twenty-five millimetres

square, in which the rich lettuce-green and darker green colors of the specimen are beautifully shown.

Procured for the Collection by Dr. S. W. Bushell of Peking, who labels it Burma-Yunnan, which is the same as to say that it reached Peking from Burma via Yunnan, no jadeite being found geologically in that province.



13

## SECTION OF BOULDER

BURMA

Dimensions:  $2.66 \times 2.62 \times 2.44$  inches.  $6.7 \times 6.6 \times 6.2$  centimetres. Weight: 1 pound 8.604 ounces. 697.520 grammes  
Specific gravity: 3.3136; hardness: 7.0. *Jadeite*  
Color: Light gray largely obscured with stainings of brown and a broad band of dark bluish-green

Section of a boulder, fissured and stained with brown and black due to hydrous oxide of iron, and presenting the appearance of having been exposed to fire. The "skin" or boulder-like exterior is stained a dead-oak-leaf color, and shows reddish reflections which are evidently ferruginous. In some parts it is stained almost black.

The crystals which compose the piece are only medium in coarseness. It slightly resembles the so-called "galvanized-iron" specimen.

The specimen was secured in Peking by Dr. S. W. Bushell, who

describes it as of Burma-Yunnan origin, which is the same as to say that it came from Burma by way of Yunnan. Jadeite is not known to occur geologically in Yunnan. Before the establishment of safe and rapid steam communication from Bhamô and Mandalay, quantities of jadeite were carried overland from the jade-quarries of Burma to Yunnan, whence it was distributed to the jade-working establishments of China.

14

## SMALL FRAGMENT

BURMA

Dimensions:  $1.0 \times .5 \times .41$  inches.  $2.5 \times 1.2 \times 1.0$  centimetres. Weight: .084 ounce. 2.387 grammes  
Specific gravity: 3.2991; hardness: 7.0. *Jadeite*  
Color: Brilliant lettuce-green

A small fragment of translucent coarsely crystalline jadeite which is seen under the microscope to consist of large and small irregular crystals of pyroxene, the smaller ones acting as a kind of cement in some parts of the rock. In other places there is an approach to an orderly arrangement of the crystals in several directions, the somewhat prismatic crystals appearing as though woven together. There are be-

sides acicular microscopic prisms that traverse the rock in several directions; a number of the needles enclosed in one jadeite being parallel to one another. These needles are colorless amphibole or actinolite. They have a lower index of refraction than the pyroxene. Some of the jadeite crystals are colored green.

Presented to the Collection by Dr. A. B. Meyer of Dresden.

15,16

## TWO SLABS

UPPER BURMA

Dimensions:  $6.06 \times 6.0 \times 1.5$  inches.  $15.4 \times 15.2 \times 3.8$  centimetres. Weight: 2 pounds 5.04 ounces. 1050.085 grammes  
 $8.62 \times 6.81 \times .56$  inches.  $21.9 \times 17.2 \times 1.4$  centimetres. 2 pounds 15.449 ounces. 1345.17 grammes  
Specific gravity: 3.2466; hardness: 7.0. *Jadeite*  
3.2578; 7.0. *Jadeite*  
Color: Different shades of gray and lavender intermingled with emerald-green and patches of black

Two slabs cut from a rough block. No. 15, which is much weathered on one side, represents the outer face of the block, while No. 16 seems to have been taken from near its centre. They both have fractured edges which well show the nature of the mineral.

The material is subtranslucent, and coarsely granular in structure, with apparent radiated reflections from one millimetre to four millimetres in diameter. There are black patches which measure from one half to three centimetres in length and show by transmitted light that they embody traces of rich lavender-purple and minute specks of green.

Microscopically thin sections of No. 16 show that the material is a coarsely granular jadeite, apparently all of the same mineral. Nothing but jadeite seems to be present.

A cube of No. 15, measuring  $0.945 \times 0.968 \times 0.981$  inch, with an area of 0.949 square inch, was one of the specimens tested by Professor Woolson. He reports that "the specimen, which was not very perfect, and seemed to be filled with cleavage planes or seams in various directions, failed suddenly with only a slight report, at a maximum load of 38,934 pounds, thus showing an ultimate strength of only 41,000 pounds per square inch," which is very low as compared with No. 7, also Burmese jadeite, whose ultimate strength was 92,416 pounds per square inch.

Three analyses were made by Walden of material taken from No. 16: one of the lavender-gray; one of the green part; and one of the mixture, as follows:

	Lavender	Green	Mixture
Silica . . . . .	57.79	57.49	57.45
Alumina . . . . .	21.40	21.56	21.94
Ferric oxide . . . . .	.80	1.05	.91
Ferrous oxide . . . . .			
Manganous oxide . . . . .	trace	trace	trace
Magnesia . . . . .	4.72	4.79	3.96
Lime . . . . .	3.06	2.90	3.10
Soda . . . . .	12.36	11.98	12.13
Potash . . . . .			
Water . . . . .	.76	.45	.79
	100.89	100.22	100.28

	Diopside CaMg(SiO <sub>3</sub> ) <sub>2</sub>	Jadeite NaAl(SiO <sub>3</sub> ) <sub>2</sub>	Jadeite Calculated to 100%	Jadeite Theory
Silica . . . . .	7.80	49.65	57.88	59.40
Alumina . . . . .		21.94	26.24	25.25
Ferric oxide . . . . .		.91		
Magnesia . . . . .	3.00	.96		
Lime . . . . .	3.10			
Soda . . . . .		12.13	15.88	15.35
Potash . . . . .				
Loss on ignition . . . . .				
	13.90	85.59	100.00	100.00



17

SMALL CYLINDER

PROBABLY BURMA

Dimensions: 1.97 × 1.34 inches. 5.0 × 3.4 centimetres. Weight: 7.606 ounces. 215.642 grammes  
Specific gravity: 3.3244; hardness: 7.0. *Jadeite*  
Color: A mottling of different shades of green with gray

A small cylinder, showing parallel saw-marks on both ends, and probably cut in China. up of lighter and darker green crystals, with scarcely any included minerals.  
The material is subtranslucent, and has a crystalline structure made The specimen was obtained from Dr. A. B. Meyer of Dresden.

18

FRAGMENT OF WEATHERED MASS

BURMA

Dimensions: 2.0 × 1.88 × 1.12 inches. 5.1 × 4.7 × 2.8 centimetres. Weight: 3.346 ounces. 94.860 grammes  
Specific gravity: 3.1223; hardness: 7.0. *Jadeite*  
Color: Intense lettuce-green with veinings of gray

A fragment of a weathered mass of subtranslucent mineral with a crystalline interwoven structure interlacing patches of lettuce-green and gray.

Microscopically the prisms are acicular and fibrous. There is an approach to a streaked or parallel fibrous structure, though the needles cross one another at right angles. It is a mixture of jadeite and amphibole, and consists of very minute fibres with a preponderating parallel arrangement, producing a more or less pronounced fibrillation or lamination in the rock. The amphibole has a pale-green color in thin sections, the crystals being pleochroic—yellowish-green parallel to the prism axis, and bluish-green at nearly right angles.

The chemical analysis by Foote, here given, shows that the specimen is a mixture of jadeite and amphibole rich in soda and magnesia:

		Jadeite	Acmite	Amphibole	Reduced	Calculated
Silica . . . . .	57.36	33.16	2.05	22.15	58.74	58.39
Alumina . . . . .	14.01	14.01				
Ferrie oxide . . . . .	1.37		1.37			
Ferrous oxide . . . . .	.79			.79		
Magnesia . . . . .	11.07			11.07	34.13	34.07
Lime . . . . .	1.91			1.91		
Soda . . . . .	11.32	8.51	.57	2.24	6.86	7.54
Potash . . . . .	.53			.53		
Water . . . . .	1.55			.10	.27	
	99.91	55.68	3.99	38.79	100.00	100.00

Amphibole . . . . .	38.79
Jadeite . . . . .	55.68
Acmite . . . . .	3.99
Excess water . . . . .	1.45
	99.91

The amphibole is unusual. In the reduced column Fe and Ca are reduced to terms of Mg, and K to Na, then all to 100 per cent. The calculated column is computed for Na<sub>2</sub>Mg<sub>7</sub>(SiO<sub>3</sub>)<sub>8</sub>.  
This amphibole may be new.

19

SMALL FRAGMENT

BURMA

Dimensions: 1.88 × 1.56 × 1.06 inches. 4.7 × 4.0 × 2.7 centimetres. Weight: 2.670 ounces. 75.695 grammes  
Specific gravity: 3.0603; hardness: 7.0. *Jadeite (?)*  
Color: Opaque emerald-green

A small crude piece of deep green material with fractures and veins slightly lighter in color. The crystalline reflections are small and brilliant. In some places there are veinings of a cream-colored mineral resembling marmolite or some other form of serpentine, varying in thickness from one tenth of a millimetre to one and a half millimetres. This may account for the low specific gravity of the specimen, which when tested before the blowpipe proved to be jadeite slightly altered by hydration, and gave a chromium reaction.



20

## FRAGMENT

BURMA

Dimensions:  $1.5 \times 1.25 \times 1.06$  inches.  $3.8 \times 3.1 \times 2.7$  centimetres. Weight: 2.402 ounces. 68.643 grammes

Specific gravity: 3.0795; hardness: 7.0. *Jadeite* (?)

Color: Lettuce-green on polished face, with numerous very light-green veinings, giving it the appearance of snake-skin. The weathered surface is bleached to a light green

An irregularly shaped fragment of lettuce-green, delicately veined in all directions with very light green, producing on the polished surface a sort of snake-like appearance. The exterior has been bleached to a light green through exposure.

The specimen is peculiar. Dr. Henry S. Washington made a special study of it in connection with No. 22 and others, and reports that as far as blowpipe tests go it is jadeite slightly altered by hydration, resulting in a lowering of the specific gravity. In the microscope, however, Professor Iddings found both to be nephrite with an intense emerald-green mineral in irregular patches and spots. It consists of bladed prismatic and irregularly shaped anhedral with a parallel arrangement in places. Some crystals are colorless, others pale

green, others intense brilliant green. In size they vary from anhedral with a diameter of about one millimetre to microscopically minute particles. The more strongly colored crystals have higher refraction and in places exhibit aggregate polarization. The colors of the different crystals vary in shade, but are of like tone, with marked pleochroism from emerald-green to greenish-yellow and yellow. The paler crystals are undoubtedly amphibole, as is shown by the prismatic cleavage. But the strongly colored mineral differs somewhat optically from most amphiboles; however, it is referred to amphibole provisionally, and may be a variety not yet described. Before the blowpipe the specimen gave reaction for chromium.

21

## SMALL CUT PIECE

BURMA

Dimensions:  $2.56 \times 1.5 \times .66$  inches.  $6.5 \times 3.8 \times 1.6$  centimetres. Weight: 2.427 ounces. 68.806 grammes

Specific gravity: 3.0905; hardness: 7.0. *Jadeite* (?)

Color: Very dark green with very delicate veinings of emerald-green on one side, and brilliant green veinings and prominent patches of white touched here and there with green

A triangular piece sawed from a mass and smoothed on all sides except at the apex, where a weathered fracture is seen.

The material is slightly subtranslucent. As far as a blowpipe test goes, the material is jadeite slightly altered by hydration; hence the low specific gravity.

22

## FRAGMENT

BURMA

Dimensions:  $2.88 \times 2.56 \times 1.31$  inches.  $7.2 \times 6.5 \times 3.3$  centimetres. Weight: 6.225 ounces. 176.493 grammes

Specific gravity: 3.0368; hardness: 7.0. *Jadeite* (?)

Color: Opaque emerald-green, the larger portion of the piece black

An irregularly shaped weathered fragment of compact crystalline material. The larger portion of the specimen consists of a black substance which resembles the black oxide of manganese, but is doubtless chromite, as it gave reaction for chromium before the blowpipe.

The microstructure of the piece resembles that of No. 20, but contains more amphibole. Washington's blowpipe tests, however, show that it is jadeite slightly altered by hydration. This accounts for the low specific gravity.

23

## FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $2.5 \times 1.38 \times 1.31$  inches.  $6.3 \times 3.5 \times 3.3$  centimetres. Weight: 6.157 ounces. 174.345 grammes

Specific gravity: 3.3481; hardness: 7.0. *Jadeite*

Color: White with a very faint grayish tint

A crude fragment of jadeite labelled in Chinese "Yunnan White Jade," but probably of Burmese origin, as explained in connection with other pieces labelled "Yunnan" when purchased. (See No. 24.) It has one polished curved face, showing that a cylindrical piece has been removed from it.

The mass is visibly crystalline, and the cleavage faces in every instance give bright reflections.



Dimensions:  $2.19 \times 1.69 \times .66$  inches.  $5.5 \times 4.2 \times 2.1$  centimetres. Weight: 2.943 ounces. 83.445 grammes  
 Specific gravity: 3.3227; hardness: 7.0. *Jadeite*  
 Color: White with a very faint grayish tint

A crude fragment of very homogeneous, coarsely crystalline jadeite, single crystals being visible to the naked eye.

Microscopical examination shows that this is very pure jadeite, almost entirely free from inclusions of other material. It consists of irregularly shaped anhedral crystals varying in size from a diameter of one millimetre to minute microscopic grains. There are prismatic forms throughout the material, and a somewhat parallel arrangement of the prisms. Pyroxene prismatic cleavage is pronounced, and extinction angles are measured as high as  $32^\circ$  and  $40^\circ$ . The cross-section of a microscopic prism shows the presence of the unit prism and orthopinacoid in nearly equal development. The cloudy-white color of the specimen is due to microscopic cracks and minute particles whose character is not determinable.

The fragment was purchased at Shanghai, China, for this Collection by Dr. Joseph Edkins, from a native Mohammedan dealer, who called the material "Yunnan jade."

Now Tang Jung-tso says distinctly in the "Essay on Jade" which he prepared for this work, that no jade is found in that province, and that probably what is called "Yunnan jade" "really comes from Burma," the only locality where jadeite is certainly known to occur *in situ*, or even in boulder form. He remarks that "dealers in jade coming hither from China must all cross this province, and from this circumstance the name of Yunnan has been given to it"; Yunnan being the Chinese province nearest to the jade-producing districts of Upper Burma.

"Formerly," as Mr. Tang says, "all jade supplies from Burma came through Yunnan," but since Burma passed under British rule, most of the supplies intended for China are sea-borne, and are sent to Canton in Southern China, whence it finds its way to the other parts of the country. From this circumstance we have what is called "Canton jade." Diligent inquiry in Canton, however, shows that no jade is produced anywhere in that province. We are therefore led to the conclusion (indicated by Dr. Edkins in one of his letters) that the phrases "Yunnan jade" and "Canton jade" simply mean "land-borne jade" via Yunnan (and a good deal still enters China by that route) and "sea-borne jade" via Canton.

Dr. Edkins, in a letter dated May 4, 1900, states that "the Burmese

mines are still in the hands of the Kakyens. Small traders sell their product at Bhamô, and the larger traders take the jade to Mandalay, where the Cantonese buy it and ship all the best to Canton. A few Yunnan traders go round by sea and dispose of their produce there themselves, but the bulk of the jade now passes into the hands of the Cantonese at Mandalay."

Mr. Thomas Selkirk of Bhamô, Upper Burma, in a letter dated October 11, 1899, states that "the Kachins carry on digging at the mines, and the Chinese—two or three thousand of them in the busy time—hang about waiting for a chance to get a good stone. Only Yunnanese do the buying on the spot. The Cantonese are the principal buyers later on, but they do not care to run the risk of sickness at the mines. This is the reason given by an acquaintance of mine who is a jade-stone trader." He adds that "there are only two places in Burma where jade is found, near each other. One place where it is dug out of the hillside has been worked about eighteen years; the other is a river-bed where jade has been worked for a long period. Most of the jade goes around by sea to Canton and Chinese ports."

According to the Chinese Imperial Maritime Customs Trade Report for 1881, 5309 piculs of crude jade were imported into Canton in that year from "foreign countries," as against 2700 piculs in 1880. The returns for 1892 show that the imports were only 3877 piculs. In 1897 the total amount was 3718 piculs, and in 1898, 4095 piculs. In 1897 only 15 piculs were imported into Shanghai from "foreign countries," and the reports for Canton show that this was a re-export from that port.

As we have seen, some Yunnan traders still go direct to the mines of Burma for their supplies, and some lapidaries from other parts of China still make their purchases of material at T'eng-yueh Chow and other cities of Yunnan, but it is possible that Canton and not Yunnan is now the chief entrepôt for Burmese jadeite.

If further evidence were needed that jadeite is not a natural product of Yunnan we have that of Dr. Fritz Noetling, chief of the Geological Survey of India, who discovered and described the jade-mines of Upper Burma, and who declared orally to Professor Max Bauer of Marburg that jade is not known to occur *in situ* anywhere in Yunnan.

Dimensions:  $1.62 \times 1.59 \times 1.25$  inches.  $4.2 \times 4.1 \times 3.2$  centimetres. Weight: 4.361 ounces. 123.625 grammes  
 Specific gravity: 3.3276; hardness: 7.0. *Jadeite*  
 Color: White with delicate lavender tint and a very tiny faint patch of light emerald-green

A fragment of coarsely crystalline jadeite, isolated crystals being very prominent on the fractured surfaces. One face has been highly polished; another, the smallest, is smooth and curved, showing that a cylindrical piece had been removed from the mass of which this was

part. A third face shows the saw-marks of the cutting process. The three remaining faces are quite rough.

In regard to Locality see No. 24.

Dimensions:  $2.06 \times 1.91 \times 1.5$  inches.  $5.2 \times 4.8 \times 3.8$  centimetres. Weight: 4.271 ounces. 121.102 grammes  
 Specific gravity: 3.3342; hardness: 7.0. *Jadeite*  
 Color: White with a very faint lilac tint

A crude fragment of highly crystalline jadeite, showing many cleavage reflections on the fractured surfaces. The crystals are as prominent as in diaspore, and have a similar lustre. It has taken a good polish on two of the cut surfaces.

Microscopically it is seen to be very pure jadeite, almost entirely

free from inclusions, and consists of irregularly shaped colorless anhedral crystals, varying in size from one millimetre to minute microscopic grains.

In regard to Locality see No. 24.



27

## FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $2.75 \times 2.56 \times 2.34$  inches.  $6.9 \times 6.5 \times 5.9$  centimetres. Weight: 1 pound 11.804 ounces. 688.248 grammes  
 Specific gravity: 3.3226; hardness: 7.0. *Jadeite*  
 Color: White with a very faint greenish-gray tint

A cuboidal fragment of remarkably compact and homogeneous jadeite almost entirely free from stainings or markings. The reflections from the crystalline cleavage are very brilliant, strikingly resembling diaspore.

One face shows the saw-marks left in the cutting process by which the specimen was detached from a larger mass.  
 In regard to Locality see No. 24.

28

## FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $2.25 \times 1.91 \times 1.12$  inches.  $5.7 \times 3.0 \times 2.8$  centimetres. Weight: 3.176 ounces. 89.8448 grammes  
 Specific gravity: 3.3288; hardness: 7.0. *Jadeite*  
 Color: White with a very faint grayish tint

A small crude fragment of jadeite, which has been partly sawn and partly broken from a larger piece, and it is noticeable that the unsawn core measures an inch across. Two faces are polished, and two only smoothed (one of them concave). The remaining two faces are entirely rough, and clearly show the crystalline character of the ma-

terial, which is translucent, and very homogeneous and compact. The faces of the jadeite crystals are all very smooth and give bright reflections under the glass which resemble those from diaspore.  
 In regard to Locality see No. 24.

29

## FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $3.75 \times 2.44 \times 2.34$  inches.  $9.5 \times 6.2 \times 5.9$  centimetres. Weight: 1 pound .187 ounce. 458.900 grammes  
 Specific gravity: 3.3122; hardness: 7.0. *Jadeite*  
 Color: White with a very faint grayish tint

A rough fragment of jadeite polished on one face, and showing on another the saw-marks left where it was separated from a large block by cutting. The material is translucent, and very compact and homogeneous, especially on the polished surface, the crystalline reflec-

tions being small, stout, and brilliant, as in some diaspores. The opaque creamy-white on some parts of the surface is evidently due to weathering.  
 In regard to Locality see No. 24.

30

## FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $4.31 \times 2.06 \times 2.06$  inches.  $10.9 \times 5.2 \times 5.2$  centimetres. Weight: 15.641 ounces. 443.427 grammes  
 Specific gravity: 3.3234; hardness: 7.0. *Jadeite*  
 Color: White with a very faint grayish tint

A rough fragment with one sawn face and one curved polished face, showing that a cylindrical piece had been removed from it by drilling with a hollow cylindrical drill.

The material is translucent and remarkably homogeneous. The crystals are very small and quite brilliant. At one end there is a rough opaque cream-colored surface which may be due to weathering,

or to the action of fire. If the locality—Burma—is correctly stated the latter is quite probable, as we know that the jade-miners there detach the rock from its bed by kindling great fires at the base of the stone. When it shows signs of splitting it is attacked with pick-axes and hammers, and in this way detached from the bed-rock.  
 In regard to Locality see No. 24.

31

## FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $3.28 \times 2.62 \times 1.12$  inches.  $8.3 \times 6.6 \times 2.8$  centimetres. Weight: 13.370 ounces. 379.027 grammes  
 Specific gravity: 3.3288; hardness: 7.0. *Jadeite*  
 Color: Very light greenish-gray

A flat fragment with two flat faces showing saw-marks, one fractured side showing the crystalline structure, a weathered side and end, and a smooth concave end showing that a circular piece had been removed

by means of a hollow cylindrical drill. The crystalline reflections are small, but quite brilliant and pronounced.  
 In regard to Locality see No. 24.



32

BROKEN CYLINDRICAL CORE

YUNNAN, PROBABLY BURMA

Dimensions: 2.19 × 1.62 × 1.03 inches. 5.5 × 4.1 × 2.6 centimetres. Weight: 4.326 ounces. 122.645 grammes  
Specific gravity: 3.3269; hardness: 7.0. *Jadeite*  
Color: White with a very faint lavender tint

Half of a cylindrical core, divided longitudinally. It is smooth at one end, and fractured at top. The material is a coarsely crystalline jadeite of remarkable purity, showing almost entirely isolated crystals in several places. Microscopically the specimen is shown to consist of irregularly shaped anhedral of colorless jadeite, varying in size from a diameter of one millimetre to minute microscopic grains.

Foot's analysis is here given with Clarke's reduction of same:

		Jadeite	Pyroxene	Uncertain
Silica . . . . .	58.86	56.97	1.02	.87
Alumina . . . . .	25.12	24.14		.98
Ferric oxide . . . . .	.16			.16
Ferrous oxide . . . . .	.12		.12	
Lime . . . . .	.44		.44	
Magnesia . . . . .	.27		.27	
Potassa . . . . .	.08	.08		
Soda . . . . .	14.62	14.62		
Water at 100° . . . . .	.04			.04
Water at 180° . . . . .	.05			.05
Water at 180°+ . . . . .	.10			.10
	99.86	95.81	1.85	2.20

(NaK)AlSi<sub>2</sub>O<sub>6</sub>. (CaMgFe)SiO<sub>3</sub>.

In regard to Locality see No. 24.

33

FLAT CIRCULAR PIECE

YUNNAN, PROBABLY BURMA

Dimensions: 2.0 × 1.81 inches. 5.1 × 2.1 centimetres. Weight: 4.711 ounces. 133.568 grammes  
Specific gravity: 3.3285; hardness: 7.0. *Jadeite*  
Color: White with a very faint shade of gray

A flat circular piece with two rough faces, evidently the core of an annular piece intended for a bracelet or the like. The material is translucent jadeite, showing coarse crystals, which are quite brilliant and resemble diaspore.

In regard to Locality see No. 24.

34

CYLINDRICAL CORE

YUNNAN, PROBABLY BURMA

Dimensions: 2.31 × 1.97 inches. 5.8 × 5.0 centimetres. Weight: 15.606 ounces. 442.440 grammes  
Specific gravity: 3.3284; hardness: 7.0. *Jadeite*  
Color: White with very faint shade of gray and small patch of light green

A cylindrical core of remarkably homogeneous and compact jadeite, bedded parallel to the flat surface; or, in other words, the flat ends of the cylinder have been cut parallel to the bedding, the better to facilitate the breaking out of the core when the piece had been drilled to the necessary depth. In this instance both ends show saw-marks, indicating that the original core may have been longer, and cut up into sections for some secondary use. The diameter of the upper-

most portion of the core (extending downward about half an inch) is a little less than that of the lower portion, showing that after drilling to a certain distance a larger tube was used.

On the sawn ends the crystalline reflections are very pronounced, and are small, stout, and brilliant.

In regard to Locality see No. 24.

35

CYLINDRICAL CORE

YUNNAN, PROBABLY BURMA

Dimensions: 2.06 × 1.75 inches. 5.2 × 4.4 centimetres. Weight: 8.968 ounces. 254.255 grammes  
Specific gravity: 3.3356 (3.3383 after one hour in water); hardness: 7.0. *Jadeite*  
Color: White with a very faint greenish-gray tint, clouded with a very faint brown

A cylindrical core, still attached to part of the rough mass from which it was being cut. The material is translucent in part, and shows very bright reflections almost like those of diaspore.

In regard to Locality see No. 24.



36

## A SMALL DISC

YUNNAN, PROBABLY BURMA

Dimensions:  $1.78 \times .53$  inches.  $4.5 \times 1.3$  centimetres. Weight: 2.340 ounces. 66.328 grammes  
Specific gravity: 3.3296; hardness: 7.0. *Jadeite*  
Color: White with a faint lavender tint

A small disc of white translucent material bedded at an angle of about  $45^\circ$  to the flat sides of the piece, which evidently formed the core of a bracelet. It has taken a good polish on all sides. The crystalline reflections indicate medium-sized crystals.  
In regard to Locality see No. 24.

37

## PARTLY CUT PIECE

YUNNAN, PROBABLY BURMA

Dimensions:  $3.25 \times 2.66 \times 1.5$  inches.  $8.2 \times 6.7 \times 3.8$  centimetres. Weight: 11.444 ounces. 324.440 grammes  
Specific gravity: 3.3305; hardness: 7.0. *Jadeite*  
Color: White with a very faint tint of gray

A raised disc, 2.5 inches in diameter and 0.75 of an inch thick, still attached to a larger thin disc over three inches in diameter, one edge of which was broken off when this piece was separated from the mass. The arrested undercutting still visible shows that an attempt had been begun to remove the smaller disc from the larger one.

The material is exceedingly compact and uniform in texture, and is quite free in most parts from blemishes of all kinds. It is only sub-translucent.

In regard to Locality see No. 24.

38

## PARTLY CUT PIECE

YUNNAN, PROBABLY BURMA

Dimensions:  $2.56 \times 2.06 \times 1.38$  inches.  $6.5 \times 5.2 \times 3.5$  centimetres. Weight: 7.652 ounces. 216.930 grammes  
Specific gravity: 3.3307; hardness: 7.0. *Jadeite*  
Color: White with a very faint greenish tint and some markings of very faint green

A rough partly cut piece, of granular crystalline structure, showing a bedding at an angle of about  $45^\circ$  across the polished face. The specimen is only half of a larger specimen divided longitudinally and which consisted of a small disc superimposed on and still undetached from a larger disc, which had been separated by fracturing from the mass after the drilling operation by which these circular discs had

been produced, leaving a rough irregular portion of the rock still adhering to it.

It is probable that an annular portion surrounding the smaller disc had been removed to form a bracelet.

In regard to Locality see No. 24.

39

## PARTLY WORKED FRAGMENT

YUNNAN, PROBABLY BURMA

Dimensions:  $3.38 \times 3.06 \times 1.25$  inches.  $8.5 \times 7.7 \times 3.1$  centimetres. Weight: 13.267 ounces. 376.110 grammes  
Specific gravity: 3.3236; hardness: 7.0. *Jadeite*  
Color: Very light greenish-gray

A rough flat piece, almost square, from the upper face of which an annular part seems to have been removed, perhaps for a bracelet, leaving a projecting circular core two inches in diameter and three eighths of an inch thick on top. The material is subtranslucent,

compact, and quite free from stainings of any kind. The crystalline reflections indicate short, stout crystals.

In regard to Locality see No. 24.

40

## SMALL DISC

YUNNAN, PROBABLY BURMA

Dimensions:  $2.09 \times .44$  inches.  $5.4 \times 1.1$  centimetres. Weight: 2.998 ounces. 84.9872 grammes  
Specific gravity: 3.3358; hardness: 7.0. *Jadeite*  
Color: Light lavender

A small polished disc of peculiarly translucent material, the crystals of which are rather short and irregular.  
In regard to Locality see No. 24.



WORKED FRAGMENT

CHINA, PROBABLY BURMA

Dimensions: 1.91 × 1.38 × .28 inches. 4.8 × 3.5 × .7 centimetres. Weight: 1.057 ounces. 29.967 grammes  
Specific gravity: 3.3303; hardness: 7.0. *Jadeite*  
Color: Pale gray

Large segment of a circular medallion ornamented on one side with a deeply incised inscription, in the ancient Chinese "tadpole" character, enclosed within an etched border of rectangular fret. The remainder of the disc was removed for microscopical examination and chemical analysis.

The material is translucent and has a remarkably perfect crystalline structure. The inner mass is made up of distinct crystals which can be seen with the naked eye. The polish on the face of the specimen is uneven and irregular.

Microscopically this is the coarsest-grained specimen examined by Iddings. It is an aggregate of colorless crystals that can be seen without the aid of a lens, the largest being three millimetres long. The size of the crystals varies greatly, from that just mentioned to microscopic dimensions, all mingled without definite arrangement or any suggestion of a porphyritic structure. The substance of the jadeite is very pure and free from inclusions in most crystals. A few show specks that seem to be incipient decomposition. These are not twinned.

The analysis, with reduction by Clarke here given, shows that the specimen is nearly ninety-eight per centum pure jadeite.

	Jadeite	R'' <sub>2</sub> R'(SiO <sub>3</sub> ) <sub>4</sub>
Silica . . . . .	57.60	57.26
Alumina . . . . .	25.75	24.50
Magnesia . . . . .	.13	
Lime . . . . .	.58	.07
Soda . . . . .	13.31	13.31
Potash . . . . .	2.20	2.20
Water . . . . .	.25	
	99.82	97.27
		.55

Jadeite . . . . .	97.27
R'' <sub>2</sub> R'(SiO <sub>3</sub> ) <sub>4</sub> . . . . .	.55
	97.82
Alumina . . . . .	1.11
Magnesia . . . . .	.13
Lime . . . . .	.51
Water . . . . .	.25
	99.82

Unaccounted for

WORKED FRAGMENT

CHINA, PROBABLY BURMA

Dimensions: 1.19 × .19 × .12 inches. 3.0 × .5 × .3 centimetres. Weight: .038 ounce. 1.072 grammes  
Specific gravity: 3.3287; hardness: 7.0. *Jadeite*  
Color: Very light gray in the upper part, and very light green in the lower

Remainder of a small ornamental Chinese pendant, which had been cut up for microscopical study and for chemical analysis.

The material is quite translucent, is composed of very minute crystals, and has taken a very high, lustrous polish.

Microscopically it presents a somewhat laminated structure in which the crystals are all quite small, grading to microscopic, the longest being about 0.8 millimetre. The lamination is due to the nearly parallel arrangement of some prisms and to the alternation of layers of coarser and finer grains.

The rock is very fresh and pure, and there is little or no sign of decomposition or alteration by dynamic forces. There is a slight central clouding in some crystals and a small amount of crushing. It is wholly jadeite without other minerals.

Clarke's reduction of Walden's analysis gave the following results:

	Jadeite	R'' <sub>2</sub> R'(SiO <sub>3</sub> ) <sub>4</sub>
Silica . . . . .	58.69	54.59
Alumina . . . . .	25.56	23.20
Magnesia . . . . .	.11	
Lime . . . . .	.58	.58
Soda . . . . .	13.09	13.09
Potash . . . . .	1.54	1.54
Water . . . . .	.17	
	99.74	92.42
		5.05

Jadeite . . . . .	92.42
R'' <sub>2</sub> R'(SiO <sub>3</sub> ) <sub>4</sub> . . . . .	5.05
	97.47
Excess silica . . . . .	1.04
Excess alumina . . . . .	1.06
Excess water . . . . .	.17
	99.74

Unaccounted for

FRAGMENT OF PENDANT

CHINA, PROBABLY BURMA

Dimensions: .88 × .31 × .28 inch. 2.2 × .8 × .7 centimetres. Weight: .075 ounce. 2.136 grammes  
Specific gravity: 3.3309; hardness: 7.0. *Jadeite*  
Color: Light green

Portion of a Chinese ornamental pendant, the greater portion of which has been used for experimental purposes.

The material is translucent, and of medium crystalline structure, in which the pyroxene crystals are well defined. It has taken a high polish.

Microscopically it consists wholly of irregularly shaped crystals of colorless jadeite averaging two millimetres in size, exhibiting undulatory extinction and twinned lamination produced by dynamical strain. There is a small amount of crushed jadeite as cement. An incipient decomposition has clouded the central part of some crystals

to a slight extent. Another thin section of the same specimen exhibits more of the crushed jadeite, and some of the crystal grains are colored light green, and are faintly pleochroic between bluish-green and yellowish-green. The color is not related to any change in the interference phenomena. Some of the larger crystals contain numerous fluid inclusions which are long and narrow and are arranged parallel to the axis of the crystal.

Where these inclusions are crowded together there is a clouding similar to that already alluded to, suggesting that these fluid inclusions are secondary.



44

## TWO BEADS AND SLIDE

CHINA, PROBABLY BURMA

Dimensions: diameter, .41 inch. 1.0 centimetre. Weight: .122 ounce. 3.477 grammes  
 Specific gravity: 3.3223; hardness: 7.0. *Jadeite*  
 Color: A mottling of white and light gray banded with brilliant lettuce-green

Two small polished beads and a slide of Burmese jadeite, one of which has been almost entirely used up in microscopical and other studies.

In the microscope the material is seen to be a fibrous modification of jadeite which might almost be mistaken for fibrous amphibole; but some of the more compact crystals are seen in cross-section with pyroxenic prismatic cleavage, and the whole mass is clearly the same kind of mineral, having the same index of refraction. It appears as

though rather large compact crystals of jadeite had been changed into groups of nearly parallel prisms of the same mineral. These are bent in various directions and grade into fine grains of jadeite. In this case, as in that of some of the coarse-grained rocks, dynamical action has changed the form of the pyroxene without altering its mineralogical character.

45

## TWO BEADS

CHINA, PROBABLY BURMA

Dimensions: diameter, .5 inch. 1.2 centimetres. Weight: .211 ounce. 5.9808 grammes  
 Specific gravity: 3.340; hardness: 7.0. *Jadeite*  
 Color: Very light lavender

Two beads (one of them broken in two) which formed part of a string of several dozen obtained by Professor A. A. Damour of Paris after the return from China of the French Expedition of 1860, when the Summer Palace near Peking was looted and so many valuable jade and other objects were carried off. It was an examination and profound study of the many specimens then brought to Paris that led Damour, in 1863, to the discovery that the term *jade* had up to that time covered two distinct minerals, differing in hardness and specific gravity: one, then known as jade (but now better known as nephrite), proving to be silicate of magnesia and lime, a member of the amphibole group; and the other a silicate of alumina and soda,

a member of the pyroxene group. To this latter he gave the name *jadeite*, thus clearing away the confusion as to the systematic position of the mineral which had hitherto existed.

The color of these beads is light lavender. The material is highly crystalline, very compact and hard, and has taken a high polish.

The beads show the usual Oriental form of drilling from each end, the apertures meeting imperfectly in the centre. They were presented to the Collection by Professor Damour, and are interesting as type specimens of the material, analysis of which led to the establishment of jadeite.

46

## FRAGMENT OF BOULDER

TIBET (?)

Dimensions:  $5.12 \times 2.97 \times 1.19$  inches.  $13.0 \times 7.5 \times 4.6$  centimetres. Weight: 1 pound 3.689 ounces. 558.206 grammes  
 Specific gravity: 3.2489; hardness: 7.0. *Jadeite*  
 Color: Very pale green and white with veinings of very dark to light brown

Fragment broken from a boulder which shows on the exterior three large dark veins, that near the edge being stained brown, due to infiltration of hydrous brown oxide of iron, or perhaps the decomposition of the jadeite. The material is subtranslucent and homogeneous,

with a crystalline structure varying from medium to quite compact. Near the centre of the mass is a soft unctuous black chlorite-like substance, resembling diabantite from Bergen Hill, New Jersey.

47

## THIN SLAB

TIBET (?)

Dimensions:  $7.5 \times 3.25 \times .19$  inches.  $19.0 \times 8.2 \times .5$  centimetres. Weight: 6.102 ounces. 173.000 grammes  
 Specific gravity: 3.2021; hardness: 7.0. *Jadeite*  
 Color: Very light opaque amethystine, on one part a darker and more translucent amethystine; there is surrounding the latter to the outer edge on one side a heavy clouding of a very light yellowish-brown. Through the centre diagonally a very narrow vein of white. There will be found a very few minute markings of emerald-green

A thin slab evidently cut from a boulder or weathered mass. The crystalline structure of the material is exceedingly coarse. A white opaque vein one millimetre wide and nine centimetres long runs transversely across the specimen. The vivid emerald-green markings suggest that the coloring matter of the green and the amethystine

was some compound of chromium, the amethystine hue being more pronouncedly that of a chrome salt than of manganese.

The slab seems to have been separated from the mass by sawing in two opposite directions.



48

THIN SLAB

TIBET (?)

Dimensions: 5.97 × 4.12 × .19 inches. 15.1 × 10.4 × .5 centimetres. Weight: 7.033 ounces. 199.385 grammes  
Specific gravity: 3.1277; hardness: 7.0. *Jadeite*  
Color: Very light gray with mottlings and cloudings of pale sea-green and patches of dark and light brown

A thin slab which shows on one edge the exterior of the original block from which it was separated by sawing (with a metallic disc) and a blow. The material is translucent and compact, and highly crystalline, with brilliant reflections on the fractured parts and bright crystalline reflections on the cut surfaces.

49

SMALL SQUARE SLAB

TIBET (?)

Dimensions: 1.66 × 1.66 × .25 inches. 4.2 × 4.2 × .6 centimetres. Weight: 1.189 ounces. 33.720 grammes  
Specific gravity: 3.3294; hardness: 7.0. *Jadeite*  
Color: Light grayish-green and very faint brown

A thin square slab presented to the Collection in 1897 by Professor A. A. Damour of Paris, and said to be of Tibetan origin. One edge shows that it had been cut from near the outer edge of a boulder, the color here varying from a pale yellow to a dark brown. The material is translucent and compact, and susceptible of a high polish. On a roughened surface individual crystals can be made out.

50

FRAGMENT

TIBET (?)

Dimensions: .94 × .91 × .38 inch. 2.4 × 2.3 × .9 centimetres. Weight: .225 ounce. 6.3749 grammes  
Specific gravity: 3.3331; hardness: 7.0. *Jadeite*  
Color: Light gray blended with light green and light brown

A small fragment of jadeite presented to the Collection by Professor E. Cohen of Greifswald, Germany, part of a larger piece which he had received in 1883 from Professor A. A. Damour of Paris, together with the results of his analyses.

The material is compact and shows a decided granular crystalline structure, the crystal reflections being very marked and readily seen by the unaided eye, or with a low-power lens. The light-brown inclusion found in the piece is evidently not a staining, but an iron coloring of the mass itself.

Professor Cohen made some investigations himself, and communicated the results obtained to the "Neues Jahrbuch für Mineralogie" (1884, Vol. I, p. 72). In that communication he states that "the relatively coarse grain of the mineral suggested at once a microscopical examination which showed that so far as the physical properties of the specimen are concerned this jadeite belongs to the pyroxene group. This is shown by the almost rectangular cleavage of some sections, by the plane of extinction of other sections (measured up

to 41°), and by the occurrence of an optical axis in basic orthodiagonal sections. Some of the crystals contain many fluid inclusions whose blebs remain unchanged as to position and volume under an increased heat of 90° Celsius. Others contain minute cloudy formations closely huddled together, but no other inclusions of any kind were found."

The analysis was as follows:

		Theory
Silica . . . . .	59.17	56.17
Alumina . . . . .	22.58	22.58
Soda . . . . .	12.93	12.93
Ferrous oxide . . . . .	1.56	1.56
Magnesia . . . . .	1.15	1.15
Lime . . . . .	2.68	2.68
	100.07	97.07
Excess silica . . . .	3.00	

51,52

TWO ANGULAR FRAGMENTS

TIBET (?)

Dimensions: 51 = 1.56 × 1.34 × .62 inches. 4.0 × 3.4 × 1.6 centimetres. Weight: 2.062 ounces. 58.445 grammes  
52 = 1.62 × 1.38 × 1.06 inches. 4.1 × 3.5 × 2.7 centimetres. 2.075 ounces. 61.650 grammes  
Specific gravity: 51 = 3.3359; hardness: 7.0. *Jadeite*  
52 = 3.3714; 7.0. *Jadeite*  
Color: Lavender with some white spots

Two fragments of the large weathered mass from which was cut the bust of Napoleon III, shown at the Paris Exposition of 1867, and from which the little figure of the Venus de Milo in the Collection (No. 799) was made. Madame Varangoz, widow of M. Berquin, the noted Paris lapidary who made the Venus de Milo, informs us that the bust of Napoleon was made, after a model by the celebrated sculptor David, from a block, seventy centimetres in height and fifty

centimetres in thickness, which had been brought to France about the year 1855, but the locality is not stated.

The material is very compact and tenacious, and is highly crystalline in structure. The crystals are long, very brilliant, and are in a more compact and darker magma. It breaks with a granular fracture showing crystalline cleavages. It was in breaking up some of this material that Penfield found two crystals from which he was able to



determine that jadeite belongs to the monoclinic system of crystallization. The crystals were prisms measuring about two millimetres in length and half a millimetre in diameter, and the isolated ones were terminated at only one end by crystal faces. They were colorless and had a vitreous lustre. The forms observed were similar to those which occur on pyroxene and ægirite, viz., the orthopinacoid  $a$  (100), two prisms  $m$  (110) and  $n$  (130), with two faces of the monoclinic pyramid  $s$  (111) forming the termination.

When examined microscopically by Iddings the material was found to be almost pure jadeite. In thin section the specimen is almost colorless, with a whitish tinge. It is traversed by numerous irregular cracks, as though the rock had been subjected to crushing. There are minute colorless veins crossing the section independent of the cracks. They are made up of larger crystals of the same mineral as the mass of the specimen. The whole is an aggregation of irregularly shaped crystals of jadeite. They do not exhibit crystallographic outlines, and vary in size, the majority being very minute. The substance of the jadeite is colorless, and exhibits the usual cleavage and optical properties. Scattered through it are microscopically small opaque specks, usually with irregular outline, whose exact character is indeterminable. They are most probably magnetite. There are also small crystals of a colorless mineral with index of refraction slightly higher than that of the surrounding jadeite, and having a double refraction about half as great as that of jadeite. Its outline in cross-sections is square and eight-sided like that of a pyroxene. In longitudinal section it is rectangular, as though bounded by prism and basal plane. It appears to be either a tetragonal or orthorhombic mineral, having the axis of greatest elasticity parallel to the length of the prism. It is so filled with inclusions of jadeite that good interference figures were not obtained, hence its uniaxial or biaxial character could not be determined. It is therefore not possible to state its mineral character. The most probable assumption

is that it is andalusite. Its quantity is not large, so that its presence does not materially affect the character of the rock, which is an almost pure jadeite.

Clarke's reduction of Foote's analysis gave the following results:

		Jadeite	$R''_2R''(SiO_2)_4$
Silica . . . . .	58.80	56.85	1.95
Alumina . . . . .	25.37	24.16	.83
Ferrie oxide . . . . .	.33		
Magnesia . . . . .	.25		.25
Lime . . . . .	.58		.11
Soda . . . . .	14.65	14.65	
Potash . . . . .	.05	.05	
Water . . . . .	.14		
	100.17	95.71	3.14
Jadeite . . . . .	95.71		
$R''_2R''(SiO_2)_4$ . . . . .	3.14		
	98.85		
Alumina . . . . .	.38		
Ferrie oxide . . . . .	.33		
Lime . . . . .	.47		
Water . . . . .	.14		
	100.17		

Unaccounted for

The material is interesting because of its color, the high polish which it takes, and its highly crystalline structure.

The original irregular weathered surface is of a dead-oak-leaf color, due to a coating of brown hydrous oxide of iron.

The crystals seem to have formed in a cavity free from gangue of any kind, and are therefore perfect crystals, not crystalline fractures.

53,54

## TWO ANGULAR FRAGMENTS

TIBET (?)

Dimensions: 53 =  $5.41 \times 2.22 \times 1.69$  inches. 13.7  $\times$  5.6  $\times$  4.3 centimetres. Weight: 1 pound 4.935 ounces. 593.520 grammes  
 54 =  $2.62 \times 2.56 \times .94$  inches. 6.6  $\times$  6.5  $\times$  2.3 centimetres. 7.932 ounces. 209.860 grammes  
 Specific gravity: 53 = 3.3315; hardness: 7.0. *Jadeite*  
 54 = 3.3391; 7.0. *Jadeite*  
 Color: Lavender with a few cloudings of white

Two angular fragments of the same weathered and water-worn mass as Nos. 51 and 52, already described as having formed part of the block from which the bust of Napoleon III, exhibited at the Exposition of 1867, was made, and from a portion of which the Venus de Milo

of the Collection (No. 799) was fashioned. The weathered markings and the polish of the water-wearing are better shown, because cut from the outer edge of the boulder, but in other respects—crystalline character and color—the material is the same.

55

## SMALL ANGULAR FRAGMENT

TIBET (?)

Dimensions:  $1.91 \times 1.25 \times .62$  inches. 4.8  $\times$  3.1  $\times$  1.6 centimetres. Weight: .938 ounce. 26.6045 grammes  
 Specific gravity: 3.3278; hardness: 7.0. *Jadeite*  
 Color: Mottled bluish-green

A small angular fragment of material said to have been brought from Tibet by the well-known Asiatic traveller, Captain Younghusband of the British army, who, however, states, in a letter received from him, that he never brought any jade from Tibet and never saw any there. The provenance of this specimen, like that of other specimens attributed to Tibet, is thus in doubt. It is possible that "Little Tibet" or Baltistan in Kashmir is the locality intended.

Captain Younghusband adds, however, that he had a faint recollection of having heard that jade had been found "in the country south of Khotan and Polu"—that is, in the northwest corner of Tibet.

The material is translucent, homogeneous and compact. The crystals are distinct, but not above medium size. Part of the fractured surface is quite smooth, suggesting that the fracture had taken place along the lines of a vein. One face has taken a beautiful polish.



56

## THIN SLAB

TIBET (?)

Dimensions:  $7.56 \times 2.91 \times .28$  inches.  $19.2 \times 7.2 \times .7$  centimetres. Weight: 6.409 ounces. 181.690 grammes  
 Specific gravity: 3.2877; hardness: 7.0. *Jadeite*  
 Color: Light sea-green shading up to very dark green, with numerous delicate white veinings

A thin slab cut from a boulder or weathered mass, showing on the outer edges an incrustation of brown hydrous oxide of iron, hematite, which penetrates the material to a depth of one half to one millimetre. The material is subtranslucent, very compact, and rather finely crystalline in structure. The irregular white veinings which traverse the material are in part fractures.

57

## FRAGMENT

TIBET (?)

Dimensions:  $1.56 \times .94 \times .19$  inches.  $3.9 \times 2.4 \times .5$  centimetres. Weight: .229 ounce. 6.513 grammes  
 Specific gravity: 3.1556; hardness: 7.0. *Jadeite*  
 Color: Dark green with cloudings of lighter green and white with light-greenish tint

A small fragment of the specimen of jadeite from the northern Himalayas, and called "Tibetan," in which Bauer found jadeite, plagioclase, and nephelite, a mixture which is fully discussed by Professor Pirsson in his paper on the Origin of Jadeite in Volume I.

58

## SMALL THIN SLAB

UNKNOWN, POSSIBLY BURMA

Dimensions:  $2.62 \times 1.31 \times .19$  inches.  $5.8 \times 3.3 \times .5$  centimetres. Weight: .6977 ounce. 19.780 grammes  
 Specific gravity: 3.3157; hardness: 7.0. *Jadeite*  
 Color: Very dark green

A small thin slab of very dark material presented to the Collection in 1898 by Professor A. A. Damour of Paris, who labelled it "jadeite passing into chloromelanite." On a fractured surface the individual crystals are seen distinctly, the length of the crystals being generally eight or nine times their width. The material is translucent, homo-

geneous and compact, and susceptible of a high polish. One edge of the specimen shows that it was cut from a boulder.

Professor Damour stated orally to Mr. Kunz in 1900 that the material from which this slab was cut was part of a large quantity imported into Marseilles, France, in 1867, from Rangoon.

59

## PART OF WORKED PIECE

INDIA (?)

Dimensions:  $1.94 \times 1.38 \times .25$  inches.  $4.9 \times 3.5 \times .6$  centimetres. Weight: .775 ounce. 21.985 grammes  
 Specific gravity: 2.9951; hardness: 6.5. *Nephrite*  
 Color: Very dark sage-green

Part of top of a sword-scabard with iron ring attached. The material is translucent, has a compact splintery structure with many minute transverse veinings. The polish on the outer surface is oily in appearance.

Microscopically the specimen is seen to be an aggregate of fibres with a parallel, sometimes curved, arrangement, and a strongly marked laminated structure, accompanied by crooked cracks. The rock ap-

pears to have been crushed or dragged, and the structure indicates a high degree of metamorphism.

The workmanship is undoubtedly Indian, but we have no knowledge of the provenance of the material. This color is very common in worked jades of India, and forms a large percentage in any collection of worked jade of that country—the proportion being very much greater than is found in a collection of Chinese jade.

60

## EIGHTEEN SMALL PEBBLES

RIVERS OF KHOTAN, EASTERN TURKISTAN

Dimensions: G = $1.19 \times .88 \times .44$ inches.	$3.0 \times 2.2 \times 1.1$ centimetres.	Weight: .4719 ounce.	13.3790 grammes
K = $1.06 \times .75 \times .28$ inches.	$2.7 \times 1.9 \times .7$ centimetres.	.2464 ounce.	6.9850 grammes
N = $1.25 \times .59 \times .31$ inches.	$3.2 \times 1.5 \times .8$ centimetres.	.2903 ounce.	8.2310 grammes
L = $1.22 \times .81 \times .31$ inches.	$3.1 \times 2.1 \times .8$ centimetres.	.2712 ounce.	7.6902 grammes
J = $1.06 \times .59 \times .59$ inches.	$2.7 \times 1.5 \times 1.5$ centimetres.	.4461 ounce.	12.6457 grammes
O = $1.06 \times .62 \times .56$ inches.	$2.7 \times 1.6 \times 1.4$ centimetres.	.3220 ounce.	9.1292 grammes
P = $1.09 \times .62 \times .31$ inches.	$2.8 \times 1.6 \times .9$ centimetres.	.2419 ounce.	6.8585 grammes
R = $1.31 \times 1.22 \times .28$ inches.	$3.3 \times 3.1 \times .7$ centimetres.	.4862 ounce.	13.7840 grammes
I = $1.28 \times .75 \times .38$ inches.	$3.2 \times 1.9 \times 1.0$ centimetres.	.3539 ounce.	10.0320 grammes



Dimensions: E=1.34 × 1.0 × .5 inches.	3.4 × 2.5 × 1.2 centimetres.	Weight: .4936 ounce.	13.9955 grammes
Q = .88 × .59 × .28 inch.	2.2 × 1.5 × .7 centimetres.	.1749 ounce.	4.9597 grammes
M = 1.25 × .62 × .28 inches.	3.2 × 1.6 × .7 centimetres.	.2469 ounce.	7.0020 grammes
B = 1.09 × .84 × .62 inches.	5.3 × 2.1 × 1.6 centimetres.	.9388 ounce.	26.6143 grammes
F = 1.47 × .75 × .44 inches.	3.7 × 1.9 × 1.1 centimetres.	.5328 ounce.	15.1050 grammes
H = 1.25 × .84 × .41 inches.	3.1 × 2.1 × 1.0 centimetres.	.4277 ounce.	12.1257 grammes
D = 1.72 × .72 × .38 inches.	4.3 × 1.8 × .9 centimetres.	.4895 ounce.	13.8795 grammes
A = 1.47 × 1.19 × .41 inches.	3.7 × 3.0 × 1.0 centimetres.	.7568 ounce.	21.4565 grammes
C = 1.53 × .84 × .5 inches.	3.9 × 2.1 × 1.2 centimetres.	.5987 ounce.	16.9752 grammes

Specific gravity: G=2.9593; hardness: 6.5.	<i>Nephrite</i>
K=2.9480;	6.5. <i>Nephrite</i>
N=2.9676;	6.5. <i>Nephrite</i>
L=2.9543;	6.5. <i>Nephrite</i>
J=2.9489;	6.5. <i>Nephrite</i>
O=2.9635;	6.5. <i>Nephrite</i>
P=2.9560;	6.5. <i>Nephrite</i>
R=2.9662;	6.5. <i>Nephrite</i>
I=2.9557;	6.5. <i>Nephrite</i>
E=2.9531;	6.5. <i>Nephrite</i>
Q=2.9532;	6.5. <i>Nephrite</i>
M=2.9512;	6.5. <i>Nephrite</i>
B=2.9656;	6.5. <i>Nephrite</i>
F=2.9407;	6.5. <i>Nephrite</i>
H=2.9523;	6.5. <i>Nephrite</i>
D=2.9568;	6.5. <i>Nephrite</i>
A=2.9484;	6.5. <i>Nephrite</i>
C=2.9515;	6.5. <i>Nephrite</i>

Color: All white with faint grayish tint (G, K, N, L, J, O, P, R, I, E, Q, M) or with a faint greenish-gray tint (B, F, H). Three are stained in addition: D with an internal clouding of dark gray; A with veinings of dead-oak-leaf; and C with a dead-oak-leaf which covers a large portion of one end

Eighteen small pebbles from the rivers of Khotan in Eastern Turkistan. They are all translucent, homogeneous and compact, and generally flat and elongated, and worn smooth by river action, and are bedded parallel with the flat side of the pebble. J, O, and B are the only rounded ones. D is clouded in part by included fibres of a black metallic substance, perhaps oxide of manganese. A shows

some staining in the fracturing of the bedding, while C is almost opaque at one end, due to alteration and the infiltration of the brown oxide of iron. L, E, and A have exactly the form and outline of small celts, requiring only the grinding of an edge at the broad end to make them effective knives or scrapers. R is only a flat section of a pebble.

61,62,63

## THREE SMALL PEBBLES

YÚRÚNGKÁSH, KHOTAN, EASTERN TURKISTAN

Dimensions: 61=1.78 × 1.0 × .28 inches.	4.5 × 2.5 × .7 centimetres.	Weight: .557 ounce.	15.791 grammes
62=1.34 × .78 × .44 inches.	3.4 × 2.0 × 1.1 centimetres.	.471 ounce.	13.3461 grammes
63=1.06 × .88 × .59 inches.	2.7 × 2.2 × 1.5 centimetres.	.552 ounce.	15.6364 grammes
Specific gravity: 61=2.9688; hardness: 6.5.	<i>Nephrite</i>		
62=2.9533;	6.5. <i>Nephrite</i>		
63=2.9718;	6.5. <i>Nephrite</i>		

Color: 61. White with a faint grayish tint  
 62. White with a very faint gray tint and stainings of dead-oak-leaf color  
 63. White with a faint gray tint and stainings of dead-oak-leaf color

Three small pebbles found with many others by Dr. Svén Hedin, the famous Swedish traveller, in some deep trenches which had been cut by the natives in an old bed of the Yúrúngkash or "White Jade" River of Khotan. His account of the occurrence is best given in his own words:

"I made an excursion (from Ilchi, the chief town of Khotan) to the village of Kaltakumat, situated six and a quarter miles to the north-east of Ilchi. To reach it I had to ford the Yúrúngkash. On the other side of Tam-aghil (Stone Village) the desert began, with occasional sand-dunes, and ravines left by the stream. After that the ground became exceedingly stony, and I soon perceived that we were riding along an old river-bed. This river-bed is one of the places that yield the largest supplies of jade. Everywhere the ground was cut by trenches six or seven feet deep, a few feet wide, and at most thirty feet long, although varying somewhat as to the amount of

work done in them. The material that is thrown up out of the trenches consists of round polished stones, sand and clay, and it is amongst these stones that the jade is found." (Svén Hedin, "Through Asia," 1899, Vol. II, p. 738.)

The Yúrúngkash has its source in the K'un Lun Mountains (where there are great jade-quarries, now almost entirely abandoned) not far from the source of the Karakash or "Black Jade" River, the former of which is specially noted for the quality of its jade boulders and pebbles.

These three pebbles, presented to the Collection by Svén Hedin, are translucent, homogeneous and compact. No. 61 is specially pure, and shows very little internal fracturing or bedding. The other two show superficial stainings, due to hydrous oxide of iron, which have penetrated slight fractures which occur in both, and give a pale-brown or amber reflection to parts of them.



64

SMALL FRAGMENT

K'UN LUN MOUNTAINS, EASTERN TURKISTAN

Dimensions: 1.09 × .47 × .28 inches. 2.8 × 1.2 × .7 centimetres. Weight: .126 ounce. 3.475 grammes  
Specific gravity: 2.9722; hardness: 6.5. *Nephrite*  
Color: White with a faint greenish tint

A small fragment broken from a larger specimen brought by the noted traveller Hermann von Schlagintweit from the jade-quarries near Gulbáshen, a caravan halting-place on the south side of the K'un Lun Mountains, latitude 36° 13' north, longitude 78° 40' east from Greenwich, and at an elevation of 12,252 feet.  
The brothers Schlagintweit visited the K'un Lun Mountains in

1856-57, and were the first to give us reliable information regarding the occurrence of jade in this region.

This specimen was presented to the Collection by Professor Weinschenk of Munich, where the original Schlagintweit specimens and records are preserved.

65

TWENTY-ONE PEBBLES

RIVERS OF KHOTAN, EASTERN TURKISTAN

Dimensions:	T = 1.94 × .88 × .44 inches. 4.9 × 2.2 × 1.1 centimetres.	Weight:	.879 ounce. 24.937 grammes
	S = 2.09 × .94 × .94 inches. 5.3 × 2.4 × 2.4 centimetres.		1.7475 ounces. 49.5415 grammes
	Q = 1.69 × 1.38 × .34 inches. 4.3 × 3.5 × .9 centimetres.		.9312 ounce. 26.3995 grammes
	L = 1.84 × 1.19 × .91 inches. 4.7 × 3.0 × 2.3 centimetres.		2.3058 ounces. 65.3705 grammes
	H = 2.38 × 1.44 × .62 inches. 6.0 × 3.7 × 1.6 centimetres.		2.0992 ounces. 59.5125 grammes
	J = 1.94 × 1.12 × .81 inches. 4.9 × 2.9 × 2.1 centimetres.		1.865 ounces. 52.898 grammes
	F = 2.25 × 1.56 × .78 inches. 5.7 × 4.0 × 2.0 centimetres.		2.535 ounces. 71.876 grammes
	U = 1.56 × .91 × .88 inches. 4.0 × 2.3 × 2.2 centimetres.		1.372 ounces. 38.913 grammes
	I = 2.44 × 1.12 × .62 inches. 6.2 × 2.9 × 1.6 centimetres.		1.849 ounces. 52.409 grammes
	P = 1.53 × 1.12 × .84 inches. 3.9 × 2.9 × 2.3 centimetres.		2.0148 ounces. 57.1205 grammes
	E = 1.97 × 1.0 × .81 inches. 5.0 × 2.5 × 2.1 centimetres.		1.913 ounces. 54.223 grammes
	N = 1.94 × 1.31 × .56 inches. 4.9 × 3.3 × 1.4 centimetres.		1.543 ounces. 43.750 grammes
	K = 2.69 × 1.5 × .88 inches. 6.8 × 3.8 × 2.2 centimetres.		3.265 ounces. 92.587 grammes
	M = 1.5 × 1.25 × .78 inches. 3.8 × 3.2 × 2.0 centimetres.		1.603 ounces. 45.435 grammes
	C = 2.62 × 1.38 × .94 inches. 6.7 × 3.5 × 2.4 centimetres.		3.125 ounces. 88.591 grammes
	A = 2.12 × 1.56 × .91 inches. 5.4 × 4.0 × 2.3 centimetres.		3.325 ounces. 94.136 grammes
	R = 1.47 × 1.44 × .34 inches. 3.7 × 3.6 × .9 centimetres.		1.1281 ounces. 31.9815 grammes
	O = 1.66 × 1.5 × .5 inches. 4.2 × 3.8 × 1.3 centimetres.		1.7183 ounces. 48.7145 grammes
	G = 2.75 × 1.25 × .81 inches. 7.0 × 3.2 × 2.1 centimetres.		3.1155 ounces. 88.3252 grammes
	B = 3.19 × 1.34 × .56 inches. 8.1 × 3.4 × 1.4 centimetres.		2.188 ounces. 62.024 grammes
	D = 2.5 × 1.12 × .81 inches. 6.4 × 2.9 × 2.1 centimetres.		2.355 ounces. 66.753 grammes
Specific gravity:	T = 2.9597; hardness: 6.5. <i>Nephrite</i>		
	S = 2.9620; 6.5. <i>Nephrite</i>		
	Q = 2.9505; 6.5. <i>Nephrite</i>		
	L = 2.9847; 6.5. <i>Nephrite</i>		
	H = 2.9722; 6.5. <i>Nephrite</i>		
	J = 2.9718; 6.5. <i>Nephrite</i>		
	F = 2.9554; 6.5. <i>Nephrite</i>		
	U = 2.9838; 6.5. <i>Nephrite</i>		
	I = 2.9497; 6.5. <i>Nephrite</i>		
	P = 2.9533; 6.5. <i>Nephrite</i>		
	E = 2.9669; 6.5. <i>Nephrite</i>		
	N = 2.9409; 6.5. <i>Nephrite</i>		
	K = 2.9612; 6.5. <i>Nephrite</i>		
	M = 2.9568; 6.5. <i>Nephrite</i>		
	C = 2.9728; 6.5. <i>Nephrite</i>		
	A = 2.9497; 6.5. <i>Nephrite</i>		
	R = 2.9544; 6.5. <i>Nephrite</i>		
	O = 2.9642; 6.5. <i>Nephrite</i>		
	G = 2.9517; 6.5. <i>Nephrite</i>		
	B = 2.9722; 6.5. <i>Nephrite</i>		
	D = 2.9493; 6.5. <i>Nephrite</i>		

Color: T. White with a faint grayish tint  
S. Light gray with faint tint of russet  
Q. Very light gray with markings of light russet  
L. Light gray very faintly tinted with russet  
H. Light gray with dark-brown veinings  
J. Light gray with veinings of russet  
F. Very light gray with stains and markings of dead-oak-leaf  
U. Very light gray with stainings of dead-oak-leaf



Color: I. Light gray with veinings of dead-oak-leaf  
 P. Light gray with markings of dead-oak-leaf  
 E. Light gray with veinings of dead-oak-leaf  
 N. Light gray with veinings of black and patch of faint russet  
 K. Light gray with stainings of oak-leaf and black  
 M. Light gray with patches of dead-oak-leaf  
 C. Light gray with patches of dead-oak-leaf  
 A. Gray almost entirely covered with veinings and stainings of brown and black  
 R. Very light greenish-gray  
 O. Light greenish-gray  
 G. Light greenish-gray with markings of light russet  
 B. Greenish-gray almost entirely covered with various shades of russet  
 D. Light sage-green much stained with dead-oak-leaf

Twenty-one pebbles from river-beds in Khotan—probably nearly all from the Karakásh. They are all translucent and of compact material bedded parallel to the flatter faces. With few exceptions, the bedded structure has influenced the form of the pebble. Several of them, notably Q, R, N, and H, are well adapted for being fashioned into cutting-implements, and would require little grinding. O, R, and S show scarcely any staining or marking. The others have all been discolored more or less in the river-bed by the action of hydrous brown oxide of iron, which has stained the surface on various parts and penetrated the fractures and bedded structure.

Three—N, H, and O—have been perforated for suspension, probably in Peking where the pebbles were secured, and T, a long pebble with rounded ends, shows a suspended lapidary operation, in which a cylindrical drill had been used. The core still adheres to the pebble, and measures seventeen millimetres in diameter. The width of the groove, which indicates the thickness of the metal tube which had been used in the drilling, and the play of the drill itself,—in other words, the amount of the material removed in the process,—represents only 0.75 millimetre.

These pebbles were obtained by Dr. S. W. Bushell in Peking.

## TWENTY-ONE PEBBLES

## KHOTAN, EASTERN TURKISTAN

Dimensions: A = 2.91 × 1.94 × .78 inches.	7.4 × 4.9 × 2.0 centimetres.	Weight: 4.736 ounces.	134.275 grammes
O = 2.91 × 2.0 × .91 inches.	7.4 × 5.1 × 2.3 centimetres.	5.295 ounces.	150.123 grammes
F = 2.88 × 2.0 × .78 inches.	7.3 × 5.1 × 2.0 centimetres.	6.832 ounces.	193.695 grammes
S = 3.12 × 1.34 × 1.0 inches.	7.9 × 3.4 × 2.5 centimetres.	4.084 ounces.	114.772 grammes
T = 2.25 × 1.62 × .91 inches.	5.7 × 4.1 × 2.3 centimetres.	3.612 ounces.	102.394 grammes
K = 3.5 × 2.19 × .75 inches.	8.9 × 5.5 × 1.9 centimetres.	5.801 ounces.	164.450 grammes
M = 2.59 × 1.97 × .72 inches.	6.6 × 5.0 × 1.8 centimetres.	4.781 ounces.	135.533 grammes
I = 2.62 × 2.0 × .94 inches.	6.7 × 5.1 × 2.4 centimetres.	5.336 ounces.	151.285 grammes
J = 2.84 × 2.09 × .78 inches.	7.2 × 5.3 × 2.0 centimetres.	7.042 ounces.	199.640 grammes
D = 3.34 × 2.38 × .84 inches.	8.5 × 6.0 × 2.1 centimetres.	7.221 ounces.	204.720 grammes
R = 2.75 × 2.25 × .69 inches.	7.0 × 5.7 × 1.7 centimetres.	5.393 ounces.	152.896 grammes
B = 3.0 × 2.53 × .69 inches.	7.6 × 6.4 × 1.7 centimetres.	5.081 ounces.	144.037 grammes
H = 3.12 × 1.94 × .78 inches.	7.9 × 4.9 × 2.0 centimetres.	4.669 ounces.	132.388 grammes
U = 2.09 × 2.09 × .84 inches.	5.3 × 5.3 × 2.1 centimetres.	3.935 ounces.	111.573 grammes
L = 1.84 × 1.69 × 1.56 inches.	4.7 × 4.3 × 4.0 centimetres.	6.353 ounces.	180.123 grammes
C = 3.12 × 2.59 × .72 inches.	7.9 × 6.5 × 1.8 centimetres.	7.621 ounces.	215.048 grammes
P = 2.84 × 1.81 × .69 inches.	7.2 × 4.6 × 1.7 centimetres.	3.654 ounces.	103.600 grammes
G = 2.81 × 2.19 × 1.0 inches.	7.1 × 5.6 × 2.5 centimetres.	6.407 ounces.	181.646 grammes
Q = 2.72 × 1.94 × .78 inches.	6.9 × 4.9 × 2.0 centimetres.	4.501 ounces.	127.612 grammes
E = 2.62 × 1.22 × 1.22 inches.	6.7 × 3.1 × 3.1 centimetres.	3.381 ounces.	95.843 grammes
N = 2.19 × 1.25 × 1.12 inches.	5.5 × 3.2 × 2.9 centimetres.	2.422 ounces.	68.883 grammes
Specific gravity: A = 2.9990; hardness: 6.5.	<i>Nephrite</i>		
O = 2.9644;	6.5.		<i>Nephrite</i>
F = 2.9633;	6.5.		<i>Nephrite</i>
S = 2.9779;	6.5.		<i>Nephrite</i>
T = 2.9931;	6.5.		<i>Nephrite</i>
K = 2.9573;	6.5.		<i>Nephrite</i>
M = 2.9665;	6.5.		<i>Nephrite</i>
I = 2.9466;	6.5.		<i>Nephrite</i>
J = 2.9750;	6.5.		<i>Nephrite</i>
D = 2.9499;	6.5.		<i>Nephrite</i>
R = 2.9782;	6.5.		<i>Nephrite</i>
B = 2.9628;	6.5.		<i>Nephrite</i>
H = 2.9400;	6.5.		<i>Nephrite</i>
U = 2.9591;	6.5.		<i>Nephrite</i>
L = 2.9812;	6.5.		<i>Nephrite</i>
C = 2.9623;	6.5.		<i>Nephrite</i>
P = 2.9514;	6.5.		<i>Nephrite</i>
G = 2.9579;	6.5.		<i>Nephrite</i>
Q = 2.9364;	6.5.		<i>Nephrite</i>
E = 2.9785;	6.5.		<i>Nephrite</i>
N = 2.9516;	6.5.		<i>Nephrite</i>



- Color: A. Very light translucent gray and opaque white  
 O. Very light gray with markings of an opaque light brown  
 F. Very light gray with patches of opaque white and stainings of russet  
 S. Light gray with stainings of dead-oak-leaf  
 T. Very light gray with stainings of dead-oak-leaf  
 K. Very light gray with russet stainings  
 M. Light gray with stainings of russet  
 I. Light gray with stainings of dark brown at both ends  
 J. Light gray with veinings of brown  
 D. Light gray with stainings of dead-oak-leaf and russet  
 R. Light greenish-gray  
 B. Light greenish-gray with a russet-colored staining at one end  
 H. Light greenish-gray with a staining of dark brown at one end, and a somewhat lighter brown at the other  
 U. Bluish-gray with stainings of very dark brown  
 L. Light gray with a faint bluish tint and brown stainings  
 C. Light greenish-gray much stained with russet  
 P. Light gray almost entirely obscured by a staining of various shades of brown  
 G. Light gray with a very evenly distributed staining of a light brown  
 Q. Very light gray almost entirely obscured by a staining of light brown becoming almost black in some parts  
 E. Light gray almost entirely covered by an incrustation of which the color is light yellowish-brown with many veinings of black  
 N. Light greenish-gray with beautiful superficial stainings on most of the surface of bright reddish-brown to deep brown, and a dull gray patch at one end

Twenty-one pebbles of diverse coloring, from the river-beds of Khotan, probably the Karakásh, if one may place any reliance on the belief that the darker colored pieces come from that river, and the lighter colored from the Yürúngkash. They are all more or less smoothed by river action, and stained by the infiltration of brown oxide of iron (noticeable more particularly in C, P, G, N, and E) and some black substance, as in I, H, U, and Q, which has soaked into the minute fractures which form the bedding. On one side of O there are large inclusions of an almost opaque yellowish mineral with pinkish tint, that is possibly only another form of nephrite. E is peculiar; there is a gray part with a hardness of 7, and brown parts with a hardness of 6—the gray part translucent, the brown part dull and opaque. The structure is fine-granular and crystalline, and very compact, and the gray part perfectly homogeneous. The hardness (7) and the strong sodium flame when fused before the blowpipe would indicate that the gray mineral is jadeite, while the specific gravity and the difficult fusibility of the piece would indicate that it is nephrite. The brown coatings appear to be superficial alteration products of the gray mass. The black veinings are dendritic growths of iron oxide or manganous oxide deposited along and outward from the walls of cracks by circulating waters.

Thin sections of both the gray and the brown parts were studied microscopically by Iddings, with the following results. The gray part he pronounces nephrite composed of minute scales and fibres of colorless amphibole exhibiting areas with nearly parallel orientation of scales, suggesting the position of former pyroxene (? jadeite) crystals, from which the nephrite was formed. There are scattered small bundles of colorless amphibole fibres relatively long and delicate (asbestiform). In some cases the fibres cross one another in several directions; in others they form fan-shaped bundles. The section with the yellowish staining (the brown part) exhibits the same microstructure as the other. The yellow color is produced by minutely dendritic cloudy matter, the outline of the component parts of which is not distinguishable. It does not appreciably affect the optical behavior of the nephrite scales or fibres which it colors, and appears as a coloring only. In narrow cracks it is concentrated and is mostly opaque; in thinner places it is brown and yellow. It appears to be hydrous oxide of iron that has penetrated the nephrite from outside sources, proceeding from the cracks in dendritic manner into the nephrite.

Another remarkable and interesting pebble in the group is that marked N. The coloration is beautifully varied and bright, while at one end is a gray patch of a different substance. The main mass is translucent and very compact, but the structure is not well shown. It appears, however, to be normal nephrite. It is traversed by a large crack deeply stained with brown. The other stains which cover the specimen appear to be caused by finely disseminated limonite. The

gray patch on top gives the same hardness, fusibility, and flame reaction for sodium as the gray part of the pebble marked E, just referred to, and is probably of the same nature. Its hardness is 7—that of jadeite. It is deeply fissured by several sets of intersecting cracks.

Two thin sections of this were also made for microscopical study. Iddings reports that the pebble is nephrite similar to E in its microscopical texture, being composed of scales and fibres of amphibole, showing by areas of nearly parallel oriented scales the position of former pyroxene crystals, the original rock having been a relatively coarse-grained one. The former grains of pyroxene are also indicated by slight differences in the amount of minute dust-like patches in different areas.

Along the edge of the section there is some yellow coloring or staining like that in E.

The second section of N is almost identical with the one described above, having the same microscopical texture. Near one end of the section there is a band which is lighter colored in incident light and darker by transmitted light. This has a different texture from the main part of the section, being composed of minute irregularly shaped crystals in part nephrite like the rest of the section, with which is mixed a colorless mineral with higher refraction but similar double refraction. This may be traced to a narrow vein where it lies in a colorless mineral resembling colorless clinochlore. The first mentioned mineral here forms well-defined prismatic crystals having the form of amphibole, and in another place there is an aggregation of well-developed crystals of amphibole exhibiting two distinct degrees of refraction, one corresponding to that of the surrounding nephrite, the other higher; so that there appear to be two kinds of nearly colorless amphibole present, one the normal nephrite, the other having a slightly different character optically and no doubt chemically. They may both fall within the range of nephrite, or one may be a different amphibole.

Several of the pebbles, *e. g.*, G, O, M, T, have the lapidary's brush designs on them, showing how they were to be utilized, and in two instances work had been begun. From the one marked G, and intended for a snuff-bottle, the upper part had been removed and the main mass of the pebble perforated, to a depth of forty-four millimetres, by a cylindrical drill four millimetres in diameter, and the circular core broken off, as is evident from the projection at the bottom of the drill hole. But perhaps the most interesting of all is B, a naturally shaped hatchet of graceful outline, needing only a little grinding on its wide crescent-shaped lower edge to make it a cutting- implement. It is finely polished by water action, and is just such a pebble as would have delighted the heart of prehistoric man—practically a ready-made tool needing only a minimum of labor to make it most effective.



67

## SECTION OF CRUDE MASS

KHOTAN, EASTERN TURKISTAN

Dimensions:  $9.62 \times 2.28 \times 1.84$  inches.  $24.4 \times 5.8 \times 4.7$  centimetres. Weight: 2 pounds 10.999 ounces. 1219.032 grammes

Specific gravity: 2.9102; hardness: 6.5. *Nephrite*

Color: White with a light-greenish tint, with stainings of various shades of brown

Section of a block of nephrite from a quarry in the K'un Lun Mountains. Three of the sides are cut and smoothed, and show marks of the Chinese slicing-wheel. The fourth shows the outer weathered surface of the mass from which it was detached in the quarry. The tough, horny character of the material is very apparent at the small fractured edges and from the internal reflections. The exterior, weathered surface differs little in color from the interior of the mass.

Microscopically studied in thin sections this specimen is seen to have an irregular texture, mostly extremely fine-grained microcrystalline to microcryptocrystalline. In places there is spherulitic fibrous texture in areas suggesting former coarse-grained rock. There are a few small crystals of muscovite with bent laminae having fibrous edges, and intercalated lenses of amphibole. There are some apatite crystals cracked and traversed by amphibole. Both the muscovite and apatite appear to be remnants of a rock metamorphosed to nephrite. Patches with yellowish to opaque grains of highly refracting mineral are indeterminable.

A chemical analysis made by Foote is here given with Clarke's reduction of same.

	(NaK)AlSi <sub>2</sub> O <sub>6</sub>	R <sub>2</sub> CaSiO <sub>6</sub>	Nephrite	
Silica . . . . .	55.93	2.02	.50	53.41
Alumina . . . . .	1.64	.86	.78	
Ferrie oxide . . . . .	.12		.12	
Ferrous oxide . . . . .	.29			.29
Manganous oxide . . . . .	.16			.16
Lime . . . . .	11.59	.46	11.13	
Magnesia . . . . .	26.05		26.05	
Potash . . . . .	.19	.19		
Soda . . . . .	.40	.40		
Water at 100° . . . . .	.52			
Water at 180° . . . . .	.32			
Water at 180°+ . . . . .	2.59		.61	
	99.80	3.47	1.86	91.65

Abstract	
Nephrite . . . . .	91.65
R <sub>2</sub> CaSiO <sub>6</sub> . . . . .	1.86
(NaK)AlSi <sub>2</sub> O <sub>6</sub> . . . . .	3.47
Excess water . . . . .	2.82
	99.80

Three half-inch cubes when tested for resistance to impact withstood an average of thirty-seven blows before breaking, the average total energy expended in producing fracture being 710,000 centimetre-grammes.

Two inch-cubes of the same material when subject to compression tests in an Emery hydraulic testing-machine showed considerable resisting power, one cube sustaining a load of 53,732 pounds per square inch before breaking, and the other a load of 66,463 pounds per square inch. A third test for tensile resistance in the same machine required a pull of 5518 pounds per square inch to break the specimen.

68

## SECTION OF BOULDER

KHOTAN, EASTERN TURKISTAN

Dimensions:  $6.0 \times 4.12 \times 2.19$  inches.  $15.2 \times 10.5 \times 5.6$  centimetres. Weight: 2 pounds 10.347 ounces. 1200.542 grammes

Specific gravity: 2.9589; hardness: 6.5. *Nephrite*

Color: Very light sage-green

Section of a water-worn boulder of translucent nephrite from some river of Khotan, probably the Yürüŋkâsh or "White Jade" River, as it is claimed that boulders and pebbles from the Karakâsh or "Black Jade" River are frequently darker in color, or are characterized by darker superficial stainings than Yürüŋkâsh pieces. The horny, schistose structure of the material is very apparent from the reflections through the cut surfaces, and on the fractured edge at one side. It is very homogeneous and compact, as is well shown by the remarkably high natural polish of the boulder surface, which may be the result of glacial action.

In the microscope thin sections of this material show signs of a former coarse-grained rock, presumably jadeite, from which the nephrite has been derived. Minute scales and fibres of amphibole are nearly parallel throughout areas corresponding to spaces once occupied by some coarse-grained aggregation of minerals. This produces a mottled appearance in the section because of the diverse orientation of the different areas of parallel scales. There are a few component crystals of larger size scattered through the mass.

The specimen was secured by Dr. S. W. Bushell in Peking.

69

## SECTION OF BOULDER

KHOTAN, EASTERN TURKISTAN

Dimensions:  $5.03 \times 3.25 \times 1.31$  inches.  $12.8 \times 8.3 \times 3.3$  centimetres. Weight: 1 pound 8.510 ounces. 694.970 grammes

Specific gravity: 2.9605; hardness: 6.5. *Nephrite*

Color: Light sage-green with cloudings of light brown and included patches of opaque grayish-white

Section of a water-worn boulder from one of the jade-rivers of Khotan. The material is translucent, homogeneous and compact, with internal reflections of the schistose structure. The water-worn exterior has been smoothed, almost polished, all over by the action of

the water. The brown cloudings are more pronounced on the exterior than on the cut surface.

The specimen was secured by Dr. S. W. Bushell in Peking.



70

FRAGMENT

VALLEY OF THE TUNGA, EASTERN PAMIRS, CENTRAL ASIA

Dimensions: 4.31 × 2.19 × .72 inches. 11.0 × 5.5 × 1.8 centimetres. Weight: 5.351 ounces. 151.698 grammes  
Specific gravity: 2.9680; hardness: 6.5. *Nephrite*  
Color: Light gray with faint greenish tint

Thin fragment from the exterior of a water-worn weathered boulder from the valley of the Tunga, a tributary of the Raskam Daria, itself an important tributary of the Yárkand Daria, if not its head stream. On the fractured surface the horny, splintery character of the mineral is well shown. Near the exterior of the narrow end is a mass measuring seventeen by sixty millimetres, of a coarsely crystalline

subtranslucent gray substance that is possibly tremolite, a mineral close to nephrite. The specimen is especially interesting because of the number of distinct crystals of iron pyrites (sulphide of iron) that appear as inclusions. Presented to the Collection by Professor J. W. von Muschketow of St. Petersburg.

71

FRAGMENT

TURKISTAN

Dimensions: 2.44 × 2.19 × .59 inches. 6.2 × 5.6 × 1.5 centimetres. Weight: 3.485 ounces. 98.800 grammes  
Specific gravity: 3.0033; hardness: 6.5. *Nephrite*  
Color: Seaweed-green

A rough fragment showing at one end the saw-marks and the rough, broken core which indicate how it was detached from the mass of which it formerly formed a part. It was procured from the collection of Dr. A. B. Meyer of Dresden. Its original home is said to have been Turkistan, but the particular spot in Turkistan from which it came is not stated. The material is translucent and compact, and of a splintery, tenacious structure. In part it is fibrous, with some of the fibres much distorted. Microscopically it is found to be a mixture of amphibole fibres in fan-shaped divergent clusters, sometimes approaching a spherulitic arrangement. Some of the bundles of fibres are long and large, and needles of compact amphibole are sparingly present. Walden's analysis, calculated by Clarke, was as follows:

	AlNaSi <sub>2</sub> O <sub>6</sub>	FeNaSi <sub>2</sub> O <sub>6</sub>	Nephrite		
Silica . . . . .	58.04	5.24	6.96	45.84	
Alumina . . . . .	2.23	2.23			
Ferric oxide . . . . .	4.64	4.64			
Ferrous oxide . . . . .	.16			.16	
Manganous oxide . . . . .	.38			.38	
Magnesia . . . . .	14.50			14.50	
Lime . . . . .	12.68			12.68	
Soda . . . . .	4.83	1.35	1.80	1.68	
Potash . . . . .	.39			.39	
Water . . . . .	2.83			2.51	
	100.68	8.82	13.40	78.14	

Abstract

Nephrite . . . . .	78.14	The nephrite contains water and alkalis replacing magnesia. The iron determination may be doubtful.
FeNaSi <sub>2</sub> O <sub>6</sub> . . . . .	13.40	
AlNaSi <sub>2</sub> O <sub>6</sub> . . . . .	8.82	
Excess water . . . . .	.32	
	100.68	

72

FRAGMENT

KHOTAN, EASTERN TURKISTAN

Dimensions: 3.88 × 2.0 × .75 inches. 9.8 × 5.1 × 1.9 centimetres. Weight: 3.825 ounces. 108.445 grammes  
Specific gravity: 2.9751; hardness: 6.5. *Nephrite*  
Color: Olive-green

Fragment of a large block quarried in Khotan. It seems to have been detached from a larger mass by sawing with a metallic disc, the marks of which are still visible on one side. Three sides have been smoothed in the slicing process; the fourth shows the weathering of the original block.

The material is translucent, very compact and homogeneous, with a hard horny texture which is well shown by the finely flaked fracture. It shows scarcely any internal reflections of the bedded structure. Faint veinings and markings of a darker form of the mineral are visible, but scarcely any inclusions.



73

## SECTION OF PEBBLE

BARKUL, EASTERN TURKISTAN

Dimensions:  $2.44 \times 1.81 \times 1.62$  inches.  $6.2 \times 4.6 \times 4.2$  centimetres. Weight: 9.199 ounces. 260.790 grammes  
 Specific gravity: 3.0137; hardness: 6.5. *Nephrite*  
 Color: Grass-green with patches of brown to very dark brown

A small cuboidal section of a water-worn pebble said to have come from Barkul near the eastern end of the T'ien-Shan or Celestial Mountains, Central Asia. Four sides show the polish of water action, the fifth has been beautifully polished by the lapidary, while the sixth still bears marks of the circular slicing saw by which the piece was cut from the original pebble.

The material is translucent, very compact and homogeneous. On the polished surface inclusions of a black metallic mineral—evidently chromite—are very apparent. On the water-worn surface a large patch of very pale green, almost white, nephrite is adjacent to and

intermingled with a much darker green material. The natural boulder exterior shows many fissures infiltrated with the brown hydrous oxide of iron. The compact horny structure of the nephrite is well shown on the fractured part.

In the microscope the specimen is seen to have a somewhat variable texture—a fine felt of amphibole, with irregularly shaped areas in which the fibres have nearly parallel orientation. There is some cracked opaque mineral surrounded by a narrow zone of colorless clinochlore (?).

Obtained by Dr. S. W. Bushell in Peking.

74

## SMALL PEBBLE

BARKUL, EASTERN TURKISTAN

Dimensions:  $2.06 \times 1.34 \times 1.12$  inches.  $5.2 \times 3.4 \times 2.8$  centimetres. Weight: 2.350 ounces. 66.624 grammes  
 Specific gravity: 2.9774; hardness: 6.5. *Nephrite*  
 Color: Grass-green

A small water-worn pebble with smooth surface, and showing scarcely any discoloration, except in the crevices in the original fractured mass that were not reached by river action. The internal fractures

and apparent bedding of the piece are well shown by the translucency of the material.

Procured in Peking by Dr. S. W. Bushell.

*Note.*—Barkul is situated between the eastern spurs of the Celestial Mountains, in about latitude  $43^{\circ} 40'$  north and longitude  $91^{\circ} 40'$  east.

75

## FRAGMENT

RASKAM DARIA, TRIBUTARY OF THE YÁRKAND RIVER

Dimensions:  $5.56 \times 2.12 \times .94$  inches.  $14.1 \times 5.4 \times 2.4$  centimetres. Weight: 9.822 ounces. 278.462 grammes  
 Specific gravity: 2.9665; hardness: 6.5. *Nephrite*  
 Color: Dark olive-green

Fragment of the exterior of what was apparently a water-worn boulder, with a more recently fractured surface, the weathered part showing large patches that are beautifully polished, whereas immediately adjacent to it is a surface of what was apparently a former vein, into which a hydrous oxide of iron had permeated. The material is translucent, homogeneous and compact. Through the mass there are a number of irregular inclusions of a brown substance, probably the same mineral in another form.

The Raskam Daria, which lies on the eastern side of the Pamir region, is probably the head stream of the Yárkand River, which rises in the Karakoram Mountains.

Presented to the Collection by Professor J. W. von Muschketow of St. Petersburg.

76

## PART OF A BOULDER

BARKUL, EASTERN TURKISTAN

Dimensions:  $2.62 \times 2.0 \times 1.91$  inches.  $6.7 \times 5.1 \times 4.7$  centimetres. Weight: 7.701 ounces. 218.326 grammes  
 Specific gravity: 3.0058; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

Part of a boulder, the exterior of which has a natural polish with no visible discoloration or oxidation.

The material is translucent and homogeneous, and of splintery, horn-like structure, as is shown by the two fractured faces. On one of the cut surfaces the saw-marks are still visible, while reaching

through from one water-worn surface to the other there is part of a large drill hole, 1.5 inches in diameter, which has been made with a hollow metallic cylindrical drill 0.5 millimetre in thickness, as is shown by an original misplaced starting mark.

Procured in Peking by Dr. S. W. Bushell.



Dimensions: .34 × .22 × .22 inch. .9 × .6 × .6 centimetre. Weight: .036 ounce. 1.0253 grammes  
Specific gravity: 3.0530; hardness: 6.5. *Nephrite*  
Color: Dark green with pale-green fracture

A tiny fragment of the great monolith on the tomb of Tamerlane, in the Gur-Emir mosque at Samarkand in Central Asia. This piece is part of a larger fragment belonging to the Kunz collection, now in the possession of the American Museum of Natural History, New York, but formerly formed part of the collection of the late Professor Heinrich Fischer of Freiburg. Fischer himself had received his fragment from Professor Barbot de Marny of the Mining Institute at St. Petersburg, who had visited Samarkand in 1874, and had "at the risk of his life" obtained a small piece of the monolith, so carefully was the tomb guarded. J. W. von Muschketow of St. Petersburg visited Samarkand in 1879, and succeeded in obtaining several fragments of the stone. These were used for analysis and microscopical examination. The material of the tiny piece in the Collection is very compact and tenacious, and shows a decided splintery, tough structure with a few reflections of included crystals, possibly unaltered jadeite. In color it strikingly resembles many specimens of New Zealand origin. Von Muschketow gives the dimensions of the slab as 1.92 metres in length, 36.75 centimetres in breadth at one end and 34 centimetres at the other, and 30 centimetres in thickness. An inscription on it gives the genealogy of Tamerlane and the date of his death (1389), but throws no light on the origin of the stone or when it was placed in the mosque. It is broken in two almost equal parts by a crack across the centre.

This break is said to have occurred in the time of the Persian warrior and usurper Nadir Shah (1688-1747). Other stories, however, are told. There is some difference of opinion as to its geological home. Fischer thought it greatly resembled the green variety of jade from Manas in Sungaria, on the northern slope of the eastern T'ien-Shan or Celestial Mountains, and called *pi-yü* or "moss-jade" by the Chinese. Von Muschketow finds a resemblance macroscopically, microscopically, and chemically to certain specimens, said to have come from the valley of the Yarkand River, which he had studied, and which he thinks came from the K'un Lun Mountains, the only definitely known source of jade in Central Asia. Fischer's theory is supported to some extent by the statement of T'ang Jung-tso of Peking, who, in his "Essay on Jade," in Volume I, tells of a variety of jade, of a deep-green color like spinach, which the dealers call Ma-na-ssü (Manas), because it is a product of that place. Manas is situated in about 86° 5' east longitude and 44° 5' north latitude, or about half-way between Khotan in Eastern Turkistan and the Sajan Mountains of Siberia, where Jaczewski has discovered nephrite *in situ*. This interesting historic fragment was added to the Collection through the courtesy of Professor F. W. Putnam, Director of the American Museum of Natural History, New York.

Dimensions: 10.31 × 10.06 × 3.09 inches. 26.2 × 25.6 × 8.0 centimetres. Weight: 20 pounds 15.097 ounces. 9500.000 grammes  
Specific gravity: 2.9832; hardness: 6.5. *Nephrite*  
Color: Sage-green with minute black specks; through the centre a vein of brownish sage-green. The weathered surface of the same colors but of darker shades

Portion of a large water-worn boulder, of flattened section, relatively wide at the fractured end, but running into a horn-like point at the other. On both faces, but especially on the back, are many rough partially weathered deep pittings and depressions which have not been subjected to as much river action as the rest, and in these the color is much darker. The specimen is remarkable on account of the remains of a surface decoration in red lacquer and gold which formerly covered both faces, but is more conspicuous on one than on the other. It is now impossible to make out the design. The block was obtained by Dr. S. W. Bushell in Peking, where it was said to have come originally from Barkul. It is thought, however, to have come from Manas, some four hundred miles farther west, whence the great monolith on the tomb of Timur at Samarkand is said to have come. (See No. 77.) The material is translucent, homogeneous and compact, and on the exterior shows reflections of sinewy veinings. Studied in the microscope, it is seen to be a fine-grained felt of scales and fibres with streaks or veins of larger blades in crystals nearly parallel to one another lying across the veins. There are minute areas and streaks of the colorless (?) clinocllore. There are, besides, a few opaque grains of a mineral dark reddish-brown in thin edges. The grains are much cracked and traversed by amphibole. The mineral may be chromite, traces of chromium being found upon analysis. Foote's analysis is here given with Clarke's reduction of same:

	(NaK)AlSi <sub>3</sub> O <sub>8</sub>	Chromite	R <sup>'''</sup> <sub>2</sub> CaSiO <sub>6</sub>	Nephrite	
Silica . . . . .	56.43	.75	.52	55.16	
Alumina . . . . .	.88	.32	.56		
Chromic oxide . . . .	.15				
Ferrie oxide . . . .	.54		.54		
Ferrous oxide . . . .	3.62	.07		3.55	
Manganous oxide . . .	.07			.07	
Nickel protoxide . . .	.06			.06	
Lime . . . . .	12.85		.49	12.36	
Magnesia . . . . .	22.68			22.68	
Potassa . . . . .	.07	.07			
Soda . . . . .	.15	.15			
Water at 100° . . . .	.30				
Water at 180° . . . .	.14				
Water at 180°+ . . .	1.92			1.44	
	99.86	1.29	.22	2.11	95.32

Abstract

Nephrite . . . .	95.32
R <sup>'''</sup> <sub>2</sub> CaSiO <sub>6</sub> . . .	2.11
Chromite . . . .	.22
R'AlSi <sub>3</sub> O <sub>8</sub> . . . .	1.29
Excess water . . .	.92
	99.86

Possible traces of clinocllore neglected.



When tested for impact resistance three half-inch cubes gave the following results:

The first cube stood 68 blows, or a final blow of 68,000 centimetre-grammes, the total energy expended in crushing it being 2,346,000 centimetre-grammes.

The second stood 76 blows, or a final blow of 76,000 centimetre-grammes, the total energy expended being 2,926,000 centimetre-grammes.

The third failed at the eighty-second blow, or a final blow of 82,000 centimetre-grammes, the total energy expended in crushing the specimen being 3,403,000 centimetre-grammes.

In the compression tests the average ultimate strength of two one-inch cubes was 23,491 pounds per square inch; and in the tensile test a specially shaped piece failed at a pull of 2321 pounds per square inch.

79

## SECTION OF BOULDER

KHOTAN, EASTERN TURKISTAN

Dimensions:  $11.75 \times 4.5 \times 3.94$  inches.  $29.8 \times 11.5 \times 10.0$  centimetres. Weight: 10 pounds 13.397 ounces. 4915.80 grammes

Specific gravity: 2.9168; hardness: 6.5. *Nephrite*

Color: Very dark gray, almost black, with mottlings and veinings of very light gray and a heavy marking of white with a faint tint of brown at one end

Section of a good-sized water-worn boulder from some river of Khotan—probably the Karakásh or “Black Jade” River. It is of the kind of nephrite known among the Chinese as *mo-yü* or “ink-jade.” In general appearance it might be taken for a quartzite boulder.

The material is translucent, very compact and homogeneous, and is made up of an apparently white mass entirely permeated by veinings and markings of almost black nephrite. This mixture gives the piece in parts a gray color, but the general effect is black. A white veining scarcely more than half a millimetre in width runs the entire length of the specimen and across the bedding, which is strongly marked by bands of an almost white nephrite varying in width from two to three millimetres, and showing an apparent faulting at the points where they cross the thin vein already referred to.

Adhering to the water-worn surface and included in the mass are large patches of a white crystalline mineral with a yellow tint.

In the microscope it is seen to be a fine felt of minute scales; some small patches with nearly parallel fibres suggest former jadeite crystals. Numerous opaque microscopic crystals are arranged in streaks to some extent, and have a yellowish metallic lustre in sunlight. Their form appears to be orthorhombic, and they may be (?) marcasite or (?) arsenopyrite.

Foote's chemical analysis is here given with Clarke's reduction:

	(NaK)AlSi <sub>2</sub> O <sub>6</sub>	ReCaSiO <sub>6</sub>	Nephrite	
Silica . . . . .	57.14	.66	.42	56.06
Alumina . . . . .	1.20	.56	.64	
Ferrie oxide . . . . .	.12		.12	
Ferrous oxide . . . . .	.21			.21
Manganous oxide . . . . .	.04			.04
Lime . . . . .	12.65	.39	12.26	
Magnesia . . . . .	25.67		25.67	
Soda . . . . .	.29			
Potassa . . . . .	.08			
Water at 100° . . . . .	.38			
Water at 180° . . . . .	.27			
Water at 180°+ . . . . .	1.89		1.59	
	99.94	1.59	1.57	95.83

Abstract	
Nephrite . . . . .	95.83
(NaK)AlSi <sub>2</sub> O <sub>6</sub> . . . . .	1.59
ReCaSiO <sub>6</sub> . . . . .	1.57
Excess water . . . . .	.95
	99.94

Material cut from this specimen was subjected to three different tests for strength: impact, compression, and tension. In the impact tests three half-inch cubes were successively subjected to the impact of a one-kilogramme hammer falling one centimetre the first blow, and an increased fall of one centimetre for each succeeding blow. The average number of blows required to fracture the cubes was 124, or a final blow of 124,000 centimetre-grammes, the average total energy required to fracture the pieces being 7,889,000 centimetre-grammes.

In the tests for resistance to compression the average ultimate strength of the two one-inch cubes used was 74,306 pounds per square inch, and in the tensile it required a pull of 2570 pounds per square inch to rupture the specially shaped piece used.

Procured for the Collection by Dr. S. W. Bushell in Peking.

80

## WORKED FRAGMENT

CHINA, PROBABLY TURKISTAN

Dimensions:  $1.09 \times .75 \times .19$  inches.  $2.9 \times 1.9 \times .5$  centimetres. Weight: .248 ounce. 7.025 grammes

Specific gravity: 2.9706; hardness: 6.5. *Nephrite*

Color: White with faint grayish tint

Fragment of an oblong medallion carved with dragons' heads. The material is remarkably pure and homogeneous, and exhibits a characteristic splintery fracture where broken. Microscopically it exhibits considerable parallelism in the fibres, in places, and shows traces of the original pyroxenic grains in the arrangement of the fibres. Prismatic crystals of amphibole lying in several directions are abundant. Sometimes a number close to one another will have parallel orientations which are shown by the exact parallelism of a group of cross-sections of amphibole prisms. The workmanship of the specimen is Chinese, but the material is probably of Turkistan origin.



An analysis by Walden, with reduction by Clarke, gave the following results:

	Jadeite	R'' <sub>2</sub> (SiO <sub>3</sub> ) <sub>2</sub>	Nephrite	Abstract	
Silica . . . . .	57.82	1.20	5.72	50.90	
Alumina . . . . .	1.14	.51	.63		Nephrite . . . . . 86.89
Ferric oxide . . . . .	4.10		4.10		R'' <sub>2</sub> (SiO <sub>3</sub> ) <sub>2</sub> . . . . . 10.45
Magnesia . . . . .	20.49			20.49	Jadeite . . . . . 2.02
Lime . . . . .	13.93			13.93	Excess water . . . . . 1.51
Soda . . . . .	.31	.31			100.87
Water . . . . .	3.08			1.57	
	100.87	2.02	10.45	86.89	

State of iron uncertain. If ferrous, the summation would be 0.41 lower and better. Nephrite would then be about seven per centum higher.

Dimensions: 2.44 × 2.25 × .31 inches. 6.2 × 5.7 × .8 centimetres. Weight: .788 ounce. 22.342 grammes  
Specific gravity: 2.9510; hardness: 6.5. *Nephrite*  
Color: White with a faint grayish tint

A broken ornament of Chinese workmanship. The material, which is probably of Turkistan origin, is compact and homogeneous, has a splintery structure and apparently no inclusions. Microscopically it is clearly the result of the amphibolic alteration of jadeite. The rock consists of microcrystalline to microcryptocrystalline aggregations of fibres of colorless amphibole that extinguish light between crossed nicols in irregular patches, showing that the original rock was a coarse-grained jadeite.

An analysis by Walden, with reduction by Clarke, gave the following results:

	Al <sub>2</sub> CaSiO <sub>6</sub>	Fe <sub>2</sub> CaSiO <sub>6</sub>	Nephrite	Abstract	
Silica . . . . .	57.77	1.47	.91	55.39	
Alumina . . . . .	2.50	2.50			Nephrite . . . . . 91.21
Ferric oxide . . . . .	2.76		2.43		Fe <sub>2</sub> CaSiO <sub>6</sub> . . . . . 4.19
Magnesia . . . . .	20.91			20.91	Al <sub>2</sub> CaSiO <sub>6</sub> . . . . . 5.34
Lime . . . . .	13.61	1.37	.85	11.39	Excess Fe <sub>2</sub> O <sub>3</sub> . . . . . .33
Water . . . . .	3.52			3.52	101.07
	101.07	5.34	4.19	91.21	

Computation uncertain. Absence of alkalis seems to render the hornblende molecule R<sub>2</sub>CaSiO<sub>6</sub> necessary. The summation of the analysis is not good.

Dimensions: 2.44 × 2.0 × .5 inches. 6.2 × 5.1 × 1.3 centimetres. Weight: 1.457 ounces. 41.312 grammes  
Specific gravity: 2.9688; hardness: 6.5. *Nephrite*  
Color: White with a faint grayish tint

Fragment of an oval carved medallion of Chinese workmanship. The material is very pure, translucent, homogeneous and compact, with parallel veinings of a slightly darker color than the mass.

Microscopically it is made up of minute scales and fibres, with occasional patches consisting of compact, not fibrous, nephrite. The

texture varies, however, from place to place. Some of it is very fine-grained; in other places there are coarser grained patches. The difference between this specimen and No. 99 is very slight, though macroscopically they differ in color.

Dimensions: 1.41 × 1.03 × .16 inches. 3.6 × 2.6 × .4 centimetres. Weight: .722 ounce. 20.483 grammes  
Specific gravity: 2.9546; hardness: 6.5. *Nephrite*  
Color: Light sage-green

A broken oblong medallion with an incised Chinese inscription. The material is translucent and compact, with splintery structure and many minute veinings, but very pure. Under the microscope there is a faint suggestion of patches derived from a previous pyroxene, but the amphibole fibres are in confused aggregation with occasional longer streaks of nearly parallel fibres.

Walden's analysis, with Clarke's reduction, gave the following results:

	Jadeite?	R'' <sub>2</sub> CaSiO <sub>6</sub>	Nephrite	Abstract	
Silica . . . . .	57.38	1.28	.81	55.29	
Alumina . . . . .	.83	.54	.29		Nephrite . . . . . 92.83
Ferric oxide . . . . .	1.71		1.71		Jadeite? . . . . . 2.15
Magnesia . . . . .	23.37			23.37	R'' <sub>2</sub> CaSiO <sub>6</sub> . . . . . 3.57
Lime . . . . .	13.14		.76	12.38	Excess water . . . . . 1.72
Soda . . . . .	.33	.33			100.27
Water . . . . .	3.51			1.79	
	100.27	2.15	3.57	92.83	



84

## WORKED FRAGMENT

CHINA, PROBABLY TURKISTAN

Dimensions:  $2.44 \times 1.06 \times .5$  inches.  $6.2 \times 2.7 \times 1.3$  centimetres. Weight: .905 ounce. 25.665 grammes  
 Specific gravity: 2.9630; hardness: 6.5. *Nephrite*  
 Color: White with a greenish tint

Part of decorated cover of a jar of Chinese workmanship. The material, which is probably of Turkistan origin, is translucent, compact and homogeneous, with a few veinings of light grayish-green.

The microstructure is clearly the result of amphibolic alteration of jadeite. The once coarse-grained aggregate of pyroxene crystals is

perfectly mapped out by patches of similarly oriented amphibole fibres arranged in a direction corresponding to the twinned position of the pyroxene lamellæ. In one place there is a banding of the fibres as though there had been a dragging of the material in that direction.

85,86  
87,88

## FOUR PEBBLES

LIU YANG RIVER, HU-NAN, CHINA

Dimensions: 85 =  $1.84 \times 1.56 \times .66$  inches.  $4.7 \times 4.0 \times 1.7$  centimetres. Weight: 2.103 ounces. 59.615 grammes  
 86 =  $1.78 \times 1.34 \times .56$  inches.  $4.5 \times 3.4 \times 1.4$  centimetres. 1.214 ounces. 34.410 grammes  
 87 =  $2.56 \times 1.66 \times .72$  inches.  $6.5 \times 4.2 \times 1.8$  centimetres. 2.984 ounces. 84.601 grammes  
 88 =  $4.12 \times 1.97 \times .72$  inches.  $10.5 \times 5.0 \times 1.8$  centimetres. 6.043 ounces. 171.320 grammes  
 Specific gravity: 85 = 2.9805; hardness: 6.5. *Nephrite*  
 86 = 2.9753; 6.5. *Nephrite*  
 87 = 2.9615; 6.5. *Nephrite*  
 88 = 2.9784; 6.5. *Nephrite*  
 Color: 85. White with light-gray tint and veinings of dead-oak-leaf  
 86. Very light gray with tiny veinings of dead-oak-leaf  
 87. Light bluish-gray with veinings and stains of dead-oak-leaf  
 88. Light gray clouded internally with black and seamed with dead-oak-leaf

Four pebbles said to have been found in the bed of the Liu Yang, a river of southern China which has its source in the mountains bordering the province of Kiangsi and flows westward past the city of Liu Yang to Chang-Sha Fu, where it joins the Siang River on its way northward to the Tung-ting-hu Lake. One of the pebbles is said to have been found near Chang-Sha, and the others near the city of Liu Yang, one hundred *li*, or about thirty-three miles, farther up the river. They differ in no respect from the pebbles which are found in the jade-rivers of Khotan, and are interesting as practically the only indication we have in the Collection of a possible occurrence of jade *in situ* in China proper.

The material is translucent and compact, bedded parallel to the flat surfaces of the pebbles. The fractures contain stainings of the

brown oxide of iron, and there are inclusions of what is probably only another form of nephrite. No. 88, the largest of the four, is bedded transversely across the structure, and includes, parallel with the bedded structure, a black metallic mineral, apparently chromite or magnetic iron, which imparts a grayish color to the mass. At one end there is a deep reddish-brown (dead-oak-leaf) seam in which a number of unaltered black crystals are present, suggesting that the brown staining is not due to this form of iron.

These specimens were obtained through Dr. Joseph Edkins of Shanghai from a Mohammedan dealer, Ma Hung-sin, with whom he has had many dealings, and who has always been found to be honest and trustworthy.

89

## FRAGMENT CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $2.38 \times 1.56 \times 1.12$  inches.  $6.0 \times 4.0 \times 2.9$  centimetres. Weight: 3.391 ounces. 96.1305 grammes  
 Specific gravity: 2.9327; hardness: 6.5. *Nephrite*  
 Color: Yellow with a faint greenish tint

A section of a rough water-worn boulder or pebble which has been stained exteriorly a dead-oak-leaf color by the action of oxide of iron, which has also penetrated the mass to some extent, especially at one end. This exterior discoloration is called by the Chinese "goose-crest brown." The material shows the characteristic reflections and compact, homogeneous texture of nephrite.

In the microscope it is seen to consist of delicate fibres curved in several directions, or which extinguish light in irregular patches. There is a yellowish-brown tabular mineral with six sides to some crystals. The same substance also occurs in minute particles, and appears to be a hydrous oxide of iron.

The specimen was purchased in Shanghai for the Collection by Dr. Joseph Edkins from a Mohammedan dealer who gave "Ho-nan," a

northern province of China, as the "finding-place." We have no exact knowledge, however, of any place in China proper where nephrite is found *in situ*. In point of fact, all the evidence goes to show that China has always been dependent on the jade-mines or the jade-rivers of Turkistan for her jade material. We are therefore justified in regarding all specimens of nephrite labelled "China" as probably a product of Khotan or Yarkand. Various jade localities, such as Lantien in the province of Shensi, are mentioned in Chinese topographies, but so elastic is the term *yü*, which is commonly translated "jade," that it includes soapstone and many other similar stones which are in no way related to jade. China is a great jade-using, but is not a jade-producing, country. It must not be inferred from this, however, that jade will never be found in place in China.



90

## FRAGMENT CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $2.75 \times 2.09 \times .94$  inches.  $7.0 \times 5.5 \times 2.4$  centimetres. Weight: 5.762 ounces. 163.350 grammes  
 Specific gravity: 2.9245; hardness: 6.5. *Nephrite*  
 Color: Mottled grayish-yellow and brown

Section of a slightly water-worn but much weathered mass, the entire outer surface of which has been stained a dead-oak-leaf color through contact with oxide of iron, which has penetrated the material to some little depth.  
 In regard to Locality see No. 89.

91

## FRAGMENT CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $4.31 \times 1.56 \times 1.09$  inches.  $10.9 \times 4.0 \times 2.8$  centimetres. Weight: 7.156 ounces. 202.880 grammes  
 Specific gravity: 2.9238; hardness: 6.5. *Nephrite*  
 Color: An impure light greenish-yellow

Section of a water-worn mass of compact and homogeneous nephrite said to have been found in the province of Ho-nan, China. The exterior has been stained a light yellowish-brown to a dark reddish-brown (dead-oak-leaf) color through contact with oxide of iron.  
 In regard to Locality see No. 89

92

## ROUGH PEBBLE

CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $2.69 \times 2.09 \times 1.25$  inches.  $6.8 \times 5.5 \times 3.2$  centimetres. Weight: 4.190 ounces. 118.797 grammes  
 Specific gravity: 2.8570; hardness: 6.5. *Nephrite*  
 Color: Translucent sage-green surrounded by light gray

A rough pebble stained exteriorly a reddish-brown, but showing on cross-section a beautifully translucent sage-green surrounded by a thick band of light-gray altered material due to calcination, an alteration which accounts for the low specific gravity.

It is probable that the piece had been subjected to strong heat, if not to the direct action of fire, for some time, probably in some conflagration, and then lost in the earth, where it lay buried perhaps for centuries, where it received its external staining through the infiltration of hydrous oxide of iron. The period must have been of some

duration, for in a section, six tenths of an inch in thickness, removed from one end the brown staining is reflected through the green, so deeply had it penetrated into the calcined part.

Studied microscopically in thin sections, it is seen that the delicate fibres of which it consists curve in several directions or extinguish light in irregular patches. There is also a yellowish-brown tabular mineral with six sides to some crystals. The same substance, which appears to be a hydrous oxide of iron, also occurs in minute particles.

In regard to Locality see No. 89.

93

## A THICK DISC

CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $2.31 \times 1.06$  inches.  $5.9 \times 2.7$  centimetres. Weight: 6.481 ounces. 183.735 grammes  
 Specific gravity: 2.9354; hardness: 6.5. *Nephrite*  
 Color: An impure yellowish-green, with dead-oak-leaf on the weathered surface

A thick disc cut with a hollow cylindrical drill from a rough water-worn and weathered mass of subtranslucent material, large patches of which are almost entirely opaque. It is entirely filled with fissures and flaws which show that the piece has been cut somewhat transversely across the bedding.

The alteration and discoloration noticeable on the top and at one side seem to be due partly to weathering and partly to the infiltration

of hydrous oxide of iron, which has penetrated some little distance into the piece. Whether this occurred before or after it was separated from the rock it is hard to say.

The cutting was no doubt done in China, but the material is probably of Turkistan origin.

In regard to Locality see No. 89.



94

## FRAGMENT CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $2.5 \times 2.0 \times 1.5$  inches.  $6.4 \times 5.1 \times 3.8$  centimetres. Weight: 6.761 ounces. 191.680 grammes  
 Specific gravity: 2.9579; hardness: 6.5. *Nephrite*  
 Color: Dull dark greenish-yellow; the weathered surface dead-oak-leaf

A cut section of a rough weathered and perhaps water-worn block which had lain exposed for some time in such a manner that the entire exposed surface has been altered to a dead-oak-leaf color, through the infiltration of brown oxide of iron, hematite. The material is translucent to subtranslucent, and is filled with many fractures which run parallel to the two flat sides of the mass.

This and the five specimens just described (Nos. 89, 90, 91, 92, 93)

are all said to have come from Ho-nan in China, and all show a wonderful exterior similarity. This is to a less extent true of the internal appearance and structure. It is not known that any crude nephrite occurs *in situ* either in Ho-nan or elsewhere within the limits of the eighteen provinces, all the nephrite used by the Chinese for their numerous works of art in jade having, from remote antiquity, probably come from Turkistan.

95

## OUTER SLAB OF BOULDER

CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $3.69 \times 3.0 \times 1.0$  inches.  $9.4 \times 7.6 \times 2.5$  centimetres. Weight: 9.596 ounces. 272.050 grammes  
 Specific gravity: 2.8847; hardness: 6.5. *Nephrite*  
 Color: Olive-green surrounded by a dull opaque brown

A slab cut from the exterior surface of a much weathered boulder, consisting of a central mass of compact olive-green nephrite surrounded by a much altered portion which is a dull opaque brown in color, and much resembles an impure jasper. The unaltered part, which constitutes not more than one sixth or one seventh of the

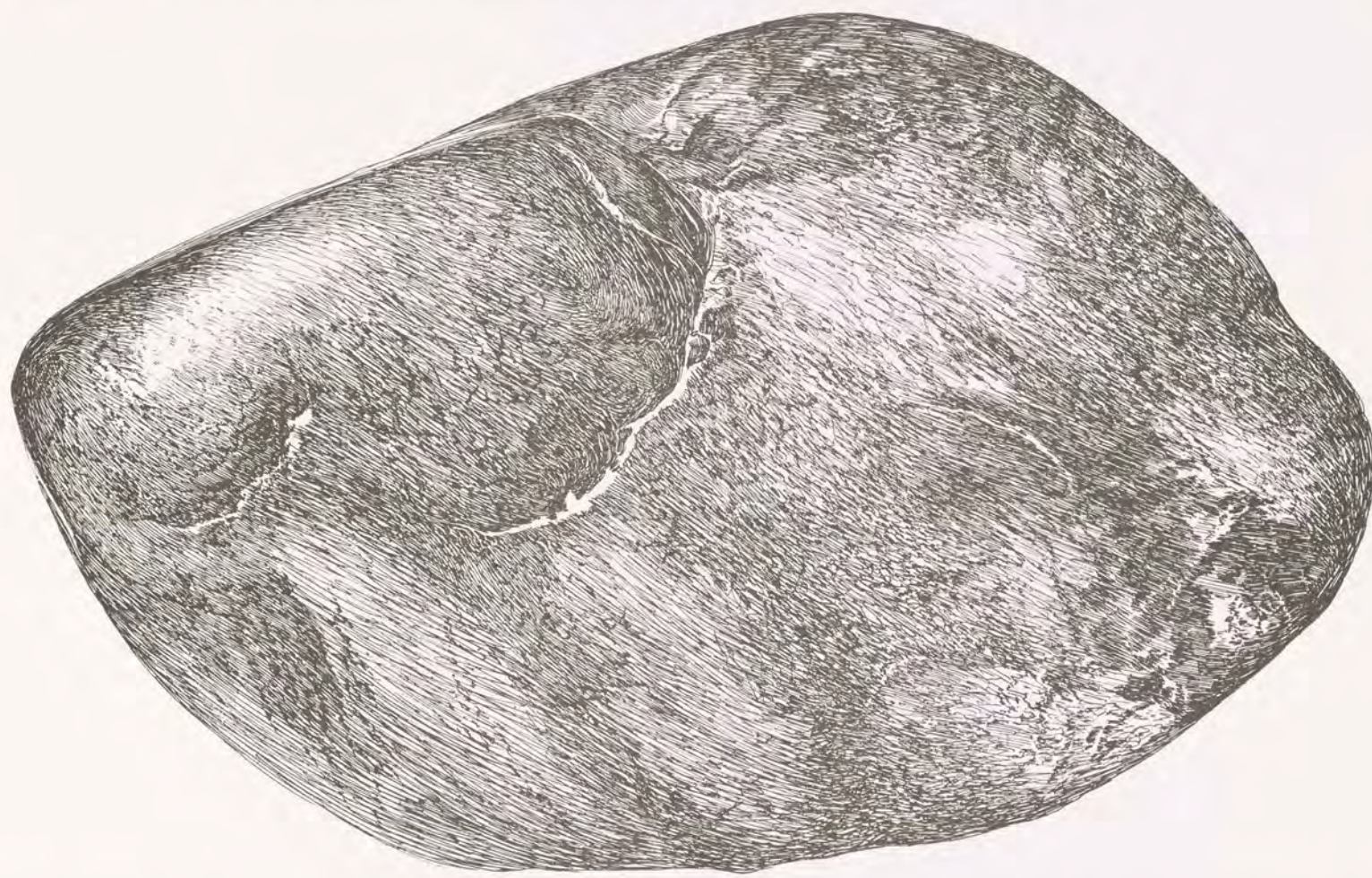
entire specimen, contains inclusions of what is probably only another form of nephrite. From the exterior alone it would be impossible to identify this piece as jade.

In regard to Locality see No. 89.

96

## BOULDER CHINA [SAID TO BE HO-NAN], POSSIBLY TURKISTAN

Dimensions:  $8.09 \times 4.84 \times 2.28$  inches.  $20.7 \times 12.3 \times 5.8$  centimetres. Weight: 3 pounds 6.883 ounces. 1555.930 grammes  
 Specific gravity: 2.9690; hardness: 6.5. *Nephrite*  
 Color: Sage-green, with light to dark-brown, almost black, patches on the weathered surface



A somewhat long flattish boulder said to have been found in a riverbed in China, but, for reasons already stated under No. 89, much more likely to have come from some river of Turkistan—perhaps the Karakásh, the pebbles and boulders of which are said to be darker than those from the other rivers of that region.

The material is translucent and compact, and has a splintery structure with an irregular, broken veining showing some parallelism to the flat sides of the boulder. Though the exterior is stained black and brown, the cut surfaces show that the mass of the material is remarkably free from such alteration.



The microstructure of the material is clearly the result of amphibolic alteration of jadeite. The rock consists of aggregations of fibres of colorless amphibole that extinguish light between crossed nicols in irregular patches, some of which are banded in parallel lines. These patches correspond to the originally twinned pyroxene, and are so coarse that the details of the structure can be seen. They consist of fan-like bundles of fibres, crossing one another in two or more directions, sometimes producing spherulitic aggregates with four long arms. In other places the fibres are arranged in lines of lenticular or spindle-shaped bundles, which produce curving lines. Between the latter are fibres in other orientations, probably bundles seen in cross-section.

The cohesive power of this material was tested in three different ways: impact, compression, and tension.

In the Impact Tests two half-inch cubes were used. In one there was very little striation, but cleavage cracks were apparent. The load was applied at right angles to these cracks. It stood eighty-one blows from a one-kilogramme hammer, allowed to fall upon the specimen through a distance of one centimetre, and an increased fall of one centimetre for each succeeding blow until it was destroyed, or a final blow of 81,000 centimetre-grammes, the total energy expended being 3,321,000 centimetre-grammes.

In the case of the other cube the load was applied parallel to the cleavage cracks, with the result that it stood only thirty-nine blows before breaking, or a final blow of 39,000 centimetre-grammes, the total energy expended being 780,000 centimetre-grammes.

For the Compression Test a single one-inch cube was used. Beginning with an initial pressure of one hundred pounds, successive loads of ten pounds were added until a load of 91,836 pounds per square

inch was reached, when the specimen failed suddenly with a sharp report.

In the Tension Test, a specially shaped piece with a thickness of 0.505 inch gave way under a pull of 1620 pounds, or 5959 pounds per square inch, being 517 pounds more than a similar specimen of New Zealand nephrite (No. 162), and 903 pounds more than a more crystalline jadeite specimen, which failed with a pull of only 1340 pounds, or 5056 pounds to the square inch.

These three tests clearly show the great resistance strength of the material.

Its chemical composition is shown by the following analysis, by Walden, calculated by Clarke:

	Jadeite	Ægirite	Nephrite
Silica . . . . .	57.43	7.39	47.22
Alumina . . . . .	3.14	3.14	
Ferrie oxide . . . . .	1.88	1.88	
Ferrous oxide . . . . .	.47		.47
Magnesia . . . . .	19.68		19.68
Lime . . . . .	12.04		12.04
Soda . . . . .	2.87	1.91	.23
Water . . . . .	2.61	.73	1.26
	100.12	12.44	5.43
			80.90

Abstract

Nephrite . . . . .	80.90
Jadeite . . . . .	12.44
Ægirite . . . . .	5.43
Excess water . . . . .	1.35
	100.12

Dimensions: 2.84 × 2.56 × 2.44 inches. 7.2 × 6.5 × 6.2 centimetres. Weight: 13.649 ounces. 386.960 grammes  
Specific gravity: 2.9825; hardness: 6.5. *Nephrite*  
Color: Light sage-green on water-worn surface

Part of a boulder from which much material has been cut for analysis and microscopical examination, and for compression tests. The outer surface has been polished by attrition, except in certain depressed fractures which were not reached in the grinding river action and are stained by the oxidation of iron and other minerals.

The material is translucent and compact, and of very fine-grained texture on the cut surfaces. The dark grayish-green visible on the cut surfaces is due to the presence of included flat crystals of graphite.

Microscopically the specimen suggests the grain of the original pyroxene rock, and occasional fragments of jadeite still remain, the mass of the rock consisting of amphibole fibres that in places reach the size of compact crystals.

So great is the tenacity of the material that when a cube measuring 0.956 × 0.957 × 1.006 inches, with an area of 0.962 square inch, was placed in an Emery hydraulic testing-machine by Professor Woolson and subjected to successive ten-pound increments of load, a pressure of 95,150 pounds per square inch was reached before the specimen gave way with a sharp report.

The analysis, with reduction by Clarke, gave the following results:

	Jadeite	R'' <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub>	Nephrite	
Silica . . . . .	58.59	4.33	1.95	52.31
Alumina . . . . .	2.33	1.84	.49	
Ferrie oxide . . . . .	.97		.97	
Ferrous oxide . . . . .	.11			.11
Manganous oxide . . . . .	.35			.35
Magnesia . . . . .	22.30			22.30
Lime . . . . .	12.41			12.41
Soda . . . . .	.98	.98		
Potash . . . . .	.21	.21		
Water . . . . .	1.54			1.54
	99.79	7.36	3.41	89.02

Abstract

Nephrite . . . . .	89.02
Jadeite . . . . .	7.36
R'' <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub> . . . . .	3.41
	99.79

Nephrite = Ca(H<sub>2</sub>Mg)<sub>3</sub>(SiO<sub>3</sub>)<sub>4</sub>.



98

## CYLINDRICAL FRAGMENT

CHINA, POSSIBLY TURKISTAN

Dimensions:  $2.25 \times 1.66$  inches.  $5.8 \times 4.2$  centimetres. Weight: 11.581 ounces. 328.317 grammes  
 Specific gravity: 2.9642; hardness: 6.5. *Nephrite*  
 Color: Dark sage-green with seams and patches of brownish-gray

A cylindrical core which has been removed from a large mass by means of a tube drill. Both flat faces are rough, and show weathering, the lower one especially showing more or less discoloration due to oxide of iron. The drilling seems to have been done at right angles to the bedding.

The material is translucent, and shows on the broken surfaces the

splintery, horn-like structure of nephrite. A pronounced veining is seen on the smooth, curved sides, and consists of the seams and protruding patches of what is apparently another form of nephrite.

The drilling was no doubt done in China, but, for the reasons stated under No. 89, it is probable that the material is of Turkistan origin.

99

## POLISHED SLAB

CHINA, POSSIBLY TURKISTAN

Dimensions:  $6.5 \times 4.41 \times .28$  inches.  $16.5 \times 11.2 \times .7$  centimetres. Weight: 14.094 ounces. 399.570 grammes  
 Specific gravity: 2.9680; hardness: 6.5. *Nephrite*  
 Color: Dark olive-green with some russet-colored veinings

An oblong polished slab with one freshly cut, unpolished end from which material for microscopical examination, chemical analysis, etc., was removed. The material is translucent and compact, with splintery structure and irregular cloudings and veinings, and inclusions of some dark-green, almost black, mineral.

Microscopically this is one of the numerous nephrites in the Collection that give evidence of having been formed by the amphibolical alteration of jadeite or pyroxene. The texture varies from place to place, which may be seen on the back of the specimen. Some of it is exceedingly fine-grained; in places it is in patches of coarser grain. It is closely akin to No. 82, though differing greatly from it in color, No. 82 being white with a faint grayish tint, while this is a dark olive-green. The two specimens consist of the same material and have almost the same specific gravity. Under the microscope the thin sections are also alike in being made up of minute scales and fibres of nephrite through which are scattered, as in this, patches consisting of parallel fibres of the same mineral, sometimes curved, while in No. 82 there are occasional patches which are not fibrous, but compact. The difference between the two is slight.

An analysis, calculated by Clarke, gave the following results:

	R''R'Si <sub>2</sub> O <sub>6</sub>	R'' <sub>2</sub> CaSiO <sub>6</sub>	Nephrite
Silica . . . . .	56.13	9.46	1.40
Alumina . . . . .	5.06	4.02	1.04
Ferric oxide . . . . .	2.12		2.12
Ferrous oxide . . . . .	1.01		1.01
Magnesia . . . . .	19.20		19.20
Lime . . . . .	11.88	1.31	10.57
Soda . . . . .	1.19	1.19	
Potash . . . . .	1.90	1.90	
Water . . . . .	2.29		1.29
	100.78	16.57	5.87
			77.34

## Abstract

Nephrite . . . . .	77.34
R''R'Si <sub>2</sub> O <sub>6</sub> . . . . .	16.57
R'' <sub>2</sub> CaSiO <sub>6</sub> . . . . .	5.87
Excess water . . . . .	1.00
	100.78

100

## SECTION OF BOULDER

CHINA [SAID TO BE YUNNAN], POSSIBLY TURKISTAN

Dimensions:  $3.47 \times 2.69 \times 1.97$  inches.  $8.8 \times 6.8 \times 5.0$  centimetres. Weight: 1 pound 1.889 ounces. 507.185 grammes  
 Specific gravity: 3.0445; hardness: 6.5. *Nephrite*  
 Color: Very dark green

Section of a boulder with remarkably smooth exterior, though a few pittings and depressions containing deposits of earth and hydrous oxide of iron are present.

The material is translucent, homogeneous and compact, with broad dark veins of probably the same mineral. The tough, horny structure is very apparent at the broken surfaces.

The piece was obtained at Peking by Dr. S. W. Bushell, who states that it is a specimen of the jade called by Chinese lapidaries *Yun Pi Yü*, "Yunnan moss-green jade," to distinguish it from the common

*pi-yü* or moss-jade. He adds that it is much more brilliant and translucent in thin slices than the last, and is often used by the Chinese for hairpins, the wings of butterflies, and leaflet earrings. The hardness and specific gravity of the specimen show that it is nephrite, and it is possible that it should be classed with the dark-green nephrites of Manas and Barkul and other parts of Chinese Turkistan. Most authorities are of the opinion that jade is not known to occur geologically in Yunnan, which is, however, a great entrepôt for the distribution throughout China of the jadeite of Burma.



101

SMALL ROUGH FRAGMENT CHARA-JELGA, KITOI ALPS, SIBERIA

Dimensions: 2.28 × 1.47 × .97 inches. 5.8 × 3.7 × 2.4 centimetres. Weight: 1.595 ounces. 45.2315 grammes  
Specific gravity: 2.9883; hardness: 6.5. *Nephrite*  
Color: Light greenish-gray, grading up to dark sea-green

A small rough fragment with one smooth face. The material is only subtranslucent, and on the fractured surfaces shows that it is rather more granular and less splintery than most nephrites. Throughout the mass may be seen a number of crystals of the black mineral—apparently chromite—so frequent in nephrite. Primary nephrite from Professor L. von Jaczewski of St. Petersburg.

102

PART OF BOULDER

SIBERIA

Dimensions: 4.84 × 3.16 × 1.5 inches. 12.3 × 8.0 × 3.8 centimetres. Weight: 1 pound 14.055 ounces. 852.060 grammes  
Specific gravity: 2.9746; hardness: 6.5. *Nephrite*  
Color: Olive-green of various shades seamed with very light gray and marked with minute black specks

Part of a weathered and much abraded boulder. The material is translucent, homogeneous and compact, except where it shows the bedding, which is fractured to a marked degree, and appears lighter in color than the mass itself. Inclusions of a black metallic substance—probably chromite—are abundant. The fractured surface shows a very minute crystalline structure with an included mass of what is apparently pyrite or pyrrhotite, measuring five millimetres by nine millimetres, partly altered to brown hydrous oxide, hematite. The outer surface of the boulder has been weathered to a brownish-gray color, and the mass itself has been altered to a depth of one millimetre.

103

SECTION OF BOULDER CHARA-JELGA, KITOI ALPS, SIBERIA

Dimensions: 5.88 × 2.94 × 1.5 inches. 14.9 × 7.5 × 3.8 centimetres. Weight: 1 pound 8.882 ounces. 705.425 grammes  
Specific gravity: 2.9888; hardness: 6.5. *Nephrite*  
Color: Olive-green mottled with darker green and seamed with grayish-green

Section of a small boulder, still showing at one end the angles of the original mass after separation from the rock-bed. On the cut surface the fractured character of the mass is made very apparent by the parallel reflections from the internal fractures. The material is translucent, and the unfractured part is very compact and homogeneous. There are a few inclusions of a black metallic substance, probably chromite. At the lower corner the piece is very much altered by weathering.

104

FRAGMENT OF BOULDER

BELAJA RIVER, NEAR IRKUTSK, SIBERIA

Dimensions: 2.91 × 2.75 × 1.12 inches. 7.4 × 7.0 × 2.8 centimetres. Weight: 9.138 ounces. 259.073 grammes  
Specific gravity: 3.0138; hardness: 6.5. *Nephrite*  
Color: Seaweed-green on cut surface; very dark brown staining on weathered surface; flecked with white on the fractured surface

A rough fragment fractured out of a boulder, part of the original water-worn surface of which is still visible. The material is translucent, remarkably homogeneous and compact, and susceptible of a high polish. On the fractured surfaces the structure is seen to be very splintery, in some places almost fibrous. There are patches, three millimetres by fifteen millimetres, that are compact and finely fibrous, giving reflections like satin-spar.

Under the microscope it is seen that the microstructure is the result of amphibolic alteration of jadeite. There are mottled patches, but the mottling is so coarse that the details of its structure can be seen. It consists of fan-like bundles of fibres crossing one another in two or more directions, sometimes producing spherulitic aggregates with four long arms. In other places the fibres are arranged in lines of lenticular or spindle-shaped bundles, which produce curving lines. Between the latter are fibres in other orientations, probably bundles seen in cross-section.

Walden's analysis, with Penfield's reduction, gave the following results:

	Glaucophane Na <sub>2</sub> Al <sub>2</sub> (SiO <sub>3</sub> ) <sub>4</sub>	Riebeckite Na <sub>2</sub> Fe <sub>2</sub> (SiO <sub>3</sub> ) <sub>4</sub>	Nephrite RSiO <sub>3</sub>	Nephrite Calculated to 100%	Theory
Silica . . . .	57.65	2.40	7.44	47.81	56.76
Alumina . . .	1.06	1.06			
Ferric oxide .	4.93	4.93			
Ferrous oxide .	.11		.11		
Magnesia . .	14.95		14.95	24.19	28.85
Lime . . . .	16.05		16.05	19.05	13.46
Soda . . . .	2.38	.62	1.76		
Potash . . .	.93	.28			
Water . . . .	2.46		2.42		
	100.52	4.08	14.41	81.34	100.00

Unaccounted for: Potash, 0.65; water, 0.04 = 0.69.

The specimen is from the collection of Dr. A. B. Meyer of Dresden, and is part of a boulder brought directly from the Belaja River by the German traveller Captain Jacobsen.



105

## FRAGMENT OF BOULDER

SIBERIA

Dimensions:  $7.69 \times 4.44 \times 2.88$  inches.  $19.5 \times 11.3 \times 7.3$  centimetres. Weight: 3 pounds 5.721 ounces. 1523.000 grammes  
 Specific gravity: 3.0260; hardness: 6.5. *Nephrite*  
 Color: Impure olive-green mottled with grayish olive-green and patches of darker olive-green in a field of much lighter color

Fragment of a large boulder, the exterior of which had been much abraded by water action, imparting to it a grayish-brown color through which, as well as on the broken sides and back of the specimen, dark greenish spots are visible. The material is translucent, and very homogeneous at one end of the broken surface. On the other it is more crystalline and contains cleavable crystals. Then it varies into

a lighter color, and then into a magma in which there are dark-brown crystals. These crystalline patches measure five millimetres across and eight millimetres in length, and are probably some hornblende mineral. One of the patches, slightly altered, has a hardness not much greater than talc, while the others have a hardness of at least 6.

106

## FRAGMENT OF BOULDER

SIBERIA

Dimensions:  $.91 \times .78 \times .38$  inch.  $2.3 \times 2.0 \times 1.0$  centimetres. Weight: .250 ounce. 7.091 grammes  
 Specific gravity: 3.0115; hardness: 6.5. *Nephrite*  
 Color: Olive-green

A small fragment cut from a boulder found in the vicinity of Lake Baikal, Siberia. The material is translucent, compact and homogeneous, has the splintery structure characteristic of nephrite, and shows some inclusions of small black crystals, probably chromite. Part of the original water-worn exterior of the boulder still remains.

The original specimen of which this forms part was obtained by Professor Arzruni from the Imperial Lapidary at Peterhof, through the late Professor von Jeremejew of the Imperial School of Mines at St. Petersburg. This fragment is from the collection of Dr. A. B. Meyer of Dresden.

107

## ROUGH FRAGMENT

ONOT RIVER, SIBERIA

Dimensions:  $5.78 \times 2.16 \times 1.56$  inches.  $14.7 \times 5.5 \times 4.0$  centimetres. Weight: 13.187 ounces. 373.859 grammes  
 Specific gravity: 3.0076; hardness: 6.5. *Nephrite*  
 Color: Grass-green and dark brown

A rough fragment, with one cut face which admirably shows the color, and a pronounced example of an original slickenside vein on one side. The material is translucent, homogeneous and compact, with an apparent splintery structure. Measured on the cut surface, the dark-brown layer is found to have a depth of fourteen millimetres,

the mineral at that depth passing somewhat abruptly into a beautiful grass-green in which there are a few small masses of a more intense color. Some inclusions of a black metallic substance, probably chromite, are present.

Collected by Professor L. von Jaczewski, 1897.

108

## SMALL SLAB

CHARA-JELGA, KITOI ALPS, SIBERIA

Dimensions:  $4.0 \times 2.31 \times .38$  inches.  $10.2 \times 5.5 \times 1.0$  centimetres. Weight: 3.692 ounces. 104.664 grammes  
 Specific gravity: 2.9978; hardness: 6.5. *Nephrite*  
 Color: Dark olive-green with black spots

A small slab of irregular fractured outline. The material is translucent, homogeneous and compact, with characteristic splintery fracture and occasional crystals of a black metallic substance conclusively proved to be chromite by the surrounding zones of a rich green of chromium coloring.

The specimen was presented to the Collection by Professor L. von

Jaczewski of St. Petersburg, the discoverer of jade *in situ* in Siberia. It is part of a primary deposit on the Chara-Jelga, a right-bank tributary of the Little Charock River, on the northern slope of the Kitoi Alps. The deposits are described by Jaczewski as forming tremendous beds from which monoliths of considerable size can be taken.

109

## OUTER SLAB OF WEATHERED MASS

ONOT RIVER, SIBERIA

Dimensions:  $4.38 \times 3.97 \times 1.06$  inches.  $11.1 \times 10.1 \times 2.7$  centimetres. Weight: 14.710 ounces. 417.030 grammes  
 Specific gravity: 2.9342; hardness: 6.5. *Nephrite*  
 Color: Olive-green with black specks

An outer slab cut from a weathered mass of translucent, very homogeneous and compact material with splintery fracture-markings which are well shown on the smooth surface. Scattered through the mass are large crystals of a black metallic substance—probably chromite—

some of which measure two millimetres across. Part of the rough surface is stained by oxidation or contact with hydrous oxide of iron.  
 From Professor L. von Jaczewski.



110

## LARGE THIN SLAB

SIBERIA

Dimensions:  $26.38 \times 10.59 \times .09$  inches.  $67.0 \times 26.9 \times .25$  centimetres. Weight: 1 pound 12.867 ounces. 818.380 grammes

Specific gravity: 2.9557; hardness: 6.5. *Nephrite*

Color: Brownish-olive with patches and beautifully translucent veinings of light olive, and widely disseminated black and dark-brown specks

A very thin slab of beautifully translucent material veined and banded in all directions, but more particularly in the line of the longer axis, and marked with numerous black metallic inclusions varying in size from one half millimetre to three millimetres in diameter, arranged in almost parallel lines diagonally across the slab. The specimen is

a cross-section of a large boulder with a dark-brown exterior. By transmitted light it presents the appearance of a relief-map of a well-watered hilly or mountainous country, the rivers and lakes being indicated by the translucent, in some places almost transparent, light-olive veinings.

111

## ROUGH FRAGMENT

CHARA-JELGA, KITOI ALPS, SIBERIA

Dimensions:  $3.94 \times 2.94 \times 1.56$  inches.  $10.0 \times 7.5 \times 4.0$  centimetres. Weight: 9.940 ounces. 281.805 grammes

Specific gravity: 2.9949; hardness: 6.5. *Nephrite*

Color: Dark olive-green with wavy black veinings

A rough fragment of primary nephrite from the great deposits discovered by Professor L. von Jaczewski in the Kitoi Alps of Siberia. The material is translucent, very homogeneous and compact, with inclusions of apparently chromite, the black metallic substance so

characteristic of nephrite. The outer fractured surface shows the small splintery fractures so characteristic of the mineral.

Presented to the Collection by Professor L. von Jaczewski of St. Petersburg.

112

## FRAGMENT

SIBERIA

Dimensions:  $4.75 \times 2.94 \times 2.56$  inches.  $12.0 \times 7.5 \times 6.5$  centimetres. Weight: 1 pound .613 ounce. 450.952 grammes

Specific gravity: 2.9789; hardness: 6.5. *Nephrite*

Color: Grass-green and yellowish-brown with black markings

Rough fragment of a boulder, the fractured surfaces of which clearly show the schistose structure of the material. The flat boulder or weathered surface shows a gray or brown alteration which extends

to the depth of about one millimetre. Minute inclusions of a black metallic surface substance—probably chromite—are visible. The material is translucent.

113

## THICK SECTION OF BOULDER

ONOT RIVER, SIBERIA

Dimensions:  $7.28 \times 3.88 \times 1.59$  inches.  $18.5 \times 9.8 \times 4.1$  centimetres. Weight: 2 pounds 10.790 ounces. 1213.167 grammes

Specific gravity: 2.9806; hardness: 6.5. *Nephrite*

Color: Grass-green mottled with dark brownish-green

A thick section of a weathered and water-worn boulder. The material, especially the darker brownish part, is translucent, homogeneous and compact, with a horny, sinewy structure which is very apparent on the broken surfaces.

The smooth water-worn surface of the boulder is of a dead-oak-leaf

color, with patches of green which had remained unaltered when the other parts assumed their ferruginous brown color. Two sides of the slab show that there were internal fractures in the boulder which had weathered before the mass had been broken up.

This is apparently part of the same material as Nos. 117 and 119.

114

## PART OF BOULDER

SIBERIA

Dimensions:  $4.12 \times 2.56 \times 2.28$  inches.  $10.5 \times 6.5 \times 5.8$  centimetres. Weight: 1 pound 4.477 ounces. 580.540 grammes

Specific gravity: 2.8989; hardness: 6.5. *Nephrite*

Color: Olive-green intermingled with black, and seamed with lighter green

Part of segment of boulder the original ferruginous brown skin of which (due to weathering) is still visible near the sharp angle. The material is translucent, and has a schistose structure which is clearly shown by numerous internal reflections.

On the exterior, near the water-worn part of the boulder, the material is softer, and apparently altered sufficiently to lower the specific gravity of the mass somewhat.



115 LARGE FRAGMENT OF BOULDER ONOT RIVER, SIBERIA

Dimensions:  $4.69 \times 4.06 \times 3.75$  inches.  $11.9 \times 10.3 \times 9.5$  centimetres. Weight: 3 pounds 14.189 ounces. 1763.050 grammes  
 Specific gravity: 2.9991; hardness: 6.5. *Nephrite*  
 Color: Olive-green. The weathered surface shows a heavy incrustation of a variegated dead-oak-leaf color

Part of a boulder which has been changed exteriorly by oxidation to a rich reddish-brown or dead-oak-leaf color, that has penetrated the mass to a depth of 0.5 millimetre. This disappears on one spot where the surface is more bedded and the original green of the nephrite appears. The hard, splintery character of the mineral is very pronounced on the two fractured surfaces.

This is one of the specimens presented to the Collection by Pro-

fessor L. von Jaczewski of St. Petersburg, the discoverer of great beds of nephrite on the northern slope of the Kitoi Alps in Siberia, one of the occurrences being on the Onot or Ospa River, about forty versts below its source. At the foot of the stratum immense boulders were found, some of them measuring four metres in length and three in breadth. It is from such a boulder from the Onot River that this specimen was taken.

116 LARGE ROUGH MASS SIBERIA

Dimensions:  $7.62 \times 7.0 \times 3.94$  inches.  $19.4 \times 17.8 \times 10.0$  centimetres. Weight: 8 pounds 10.336 ounces. 3921.820 grammes  
 Specific gravity: 2.9626; hardness: 6.5. *Nephrite*  
 Color: Light olive-green with small patches of dark brown

A large rough weathered mass, with two flat cut surfaces, and one smooth flat weathered surface of very dark brown color, becoming almost black, but penetrating the material to a depth of less than 0.25 millimetre.  
 The material is translucent, and of schistose, horny texture.

117 ROUGH FRAGMENT SIBERIA

Dimensions:  $6.0 \times 3.97 \times 2.88$  inches.  $15.2 \times 10.1 \times 7.3$  centimetres. Weight: 2 pounds 8.902 ounces. 1159.570 grammes  
 Specific gravity: 2.9590; hardness: 6.5. *Nephrite*  
 Color: Grass-green with large cloudings and veinings of dark brown

A rough fragment with one polished face showing a beautiful grass-green enclosing irregular broad veins of a dark-brown form of nephrite, with inclusions of a black metallic substance, probably chromite. This is a fractured piece; some of the fractured surfaces, however,

had been weathered before it was broken from the mass. At one side there are mottlings of different shades of a dead-oak-leaf color due to ferruginous staining or alteration. The material is translucent.

118 WEATHERED BLOCK SIBERIA

Dimensions:  $5.44 \times 3.38 \times 2.84$  inches.  $13.8 \times 8.6 \times 7.2$  centimetres. Weight: 3 pounds 2.159 ounces. 1422.000 grammes  
 Specific gravity: 2.9624; hardness: 6.5. *Nephrite*  
 Color: Light olive-green exteriorly veined and mottled with dark brownish-green and black. The weathered surface is light brown

Large weathered block with two cut surfaces, one of them, parallel with the bedded structure, presenting a polished appearance, and one, across the bedding, entirely lacking every appearance of polish, though both received the same amount of sawing. The material is translucent, homogeneous and compact, with horny structure which is well shown on the two fractured sides.

119 LARGE FRAGMENT OF BOULDER ONOT RIVER, SIBERIA

Dimensions:  $4.81 \times 4.22 \times 2.94$  inches.  $12.2 \times 10.7 \times 7.5$  centimetres. Weight: 3 pounds .273 ounce. 1368.540 grammes  
 Specific gravity: 3.0069; hardness: 6.5. *Nephrite*  
 Color: Very light green intermingled with large patches of translucent grass-green and a darker brownish-green; the weathered surface of dead-oak-leaf

A rough fragment of water-worn boulder, with one highly polished face which beautifully shows the color and the homogeneous character of the mineral. Inclusions of a black metallic substance—probably chromite—are present. The smooth, almost polished, water-worn surface of the boulder consists of green with mottlings of a ferruginous brown, in some parts almost black, possibly due to its

having lain in contact with an oxide of manganese or some iron mineral. At one point on the water-worn surface a mineral of asbestiform character corresponding to the light color is apparent, forming a vein enclosing the darker green material. The asbestiform character of this mineral is so pronounced that included crystals can almost be resolved.



120

THIN SLAB

SIBERIA

Dimensions: 2.5 × 1.69 × .06 inches. 6.4 × 4.3 × .15 centimetres. Weight: .408 ounce. 11.574 grammes  
Specific gravity: 3.0070; hardness: 6.5. *Nephrite*  
Color: Seaweed-green clouded in part with light brown, and deeply stained with very dark brown on one end near the natural edge

Part of a very thin slab cut from a boulder, from the collection of Dr. A. B. Meyer of Dresden. The material is highly translucent, very compact and homogeneous, and shows a characteristic splintery structure with minute black inclusions. The unfractured outer rim shows the smoothness of the original water-worn boulder from which the slab was cut.  
The microstructure is seen to be a nearly uniform mixture of amphibole fibres in fan-shaped divergent clusters, sometimes approaching a spherulitic arrangement.

The chemical composition is shown in the following analysis by Walden, calculated by Clarke:

	AlNaSi <sub>2</sub> O <sub>6</sub>	R'' <sub>2</sub> CaSiO <sub>6</sub>	Nephrite		
Silica . . . . .	55.96	1.97	2.43	51.56	
Alumina . . . . .	2.33	.84	1.49		
Ferrie oxide . . . . .	4.28		4.12		
Magnesia . . . . .	20.35			20.35	
Lime . . . . .	13.49		2.26	11.23	
Soda . . . . .	.51	.51			
Water . . . . .	2.72			2.72	
	99.64	3.32	10.30	85.86	

Abstract

Nephrite . . . . .	85.86	Here, unless the iron oxide
AlNaSi <sub>2</sub> O <sub>6</sub> . . . . .	3.32	is in error, the hornblende
R'' <sub>2</sub> CaSiO <sub>6</sub> . . . . .	10.30	molecule R'' <sub>2</sub> CaSiO <sub>6</sub> seems to
Excess Fe <sub>2</sub> O <sub>3</sub> . . . . .	.16	be necessary.
	99.64	

121

FRAGMENT

ONOT RIVER, SIBERIA

Dimensions: 3.19 × 1.81 × 1.44 inches. 8.1 × 4.6 × 3.6 centimetres. Weight: 3.754 ounces. 106.434 grammes  
Specific gravity: 2.9843; hardness: 6.5. *Nephrite*  
Color: Olive-green with veinings of very dark brown

A fractured fragment of translucent material showing the characteristic splintery, horn-like structure characteristic of nephrite.

122

FRAGMENT OF BOULDER

ONOT RIVER, SIBERIA

Dimensions: 5.44 × 1.44 × .91 inches. 13.8 × 3.6 × 2.3 centimetres. Weight: 8.006 ounces. 226.957 grammes  
Specific gravity: 2.9913; hardness: 6.5. *Nephrite*  
Color: Olive-green mottled with dark brown. The weathered surface dark reddish-brown

A long, narrow section cut from near the outer edge of a boulder with a reddish-brown ferruginous "skin" scarcely half a millimetre in thickness. Near the outer edge, and underlying the reddish-brown skin, is a zone some five to seven millimetres in breadth, of opaque, almost milky-white, material with a faint greenish tint which presents an altered appearance. Included in this zone are inclusions of a dendritic mineral, either oxide of iron or oxide of manganese. The brown color of the exterior may be due to the alteration of this mineral.

123

FRAGMENT OF BOULDER

SIBERIA

Dimensions: 7.38 × 7.09 × 1.38 inches. 18.7 × 18.0 × 3.5 centimetres. Weight: 5 pounds 2.952 ounces. 2351.690 grammes  
Specific gravity: 2.9930; hardness: 6.5. *Nephrite*  
Color: Dull dark olive-green with blackish mottlings and flecks of light yellowish-green. The weathered surface is brown shading into almost black

Part of a large boulder. The material is translucent, and shows on the fractured surface a tough, horny structure. At one point the bedded structure is almost columnar. On the cut surface are seen pale yellowish reflections, due to the fracturing of the bedded structure, and included irregular dark patches of the same mineral. The dark brown of the weathered boulder surface, which is one half to five millimetres in thickness, is due probably in part to some mineral staining or the penetration of organic matter, as the apparently unaltered mineral is visible through it when the specimen is wet.  
Microstructure: A fine felt of amphibole with streaks and patches of blades and bundles of somewhat larger crystals of the same mineral.



124

## HALF OF BOULDER

SIBERIA

Dimensions:  $11.59 \times 6.25 \times 4.34$  inches.  $29.4 \times 15.8 \times 11.0$  centimetres. Weight: 17 pounds 13.685 ounces. 8009.170 grammes  
 Specific gravity: 2.9976; hardness: 6.5. *Nephrite*  
 Color: Olive-green with cloudings of dark brown and minute light-gray veinings. On the water-worn surface spinach-green with brown incrustations

Half of a long boulder from the narrower end of which a segment has been removed. The material is translucent, very compact and homogeneous, with a schistose structure which is well shown on a small fractured surface at one end. The boulder is very free from all stainings.

Microscopically it is seen to be a nearly colorless to pale-green

nephrite, mottled by grayish spots, and is traversed by irregularly curved, and sometimes fan-shaped, cracks. There are a few opaque black spots. The gray spots are cross-sections of amphibole crystals and prisms, exhibiting the characteristic cleavage. The texture is not uniform, consisting of amphibole prisms and blades and a finer felt of the same mineral.

125

## SEGMENT OF BOULDER

SIBERIA

Dimensions:  $4.5 \times 2.84 \times 1.72$  inches.  $11.4 \times 7.2 \times 4.4$  centimetres. Weight: 1 pound 8.560 ounces. 696.365 grammes  
 Specific gravity: 3.0122; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with an intermingling of various shades of yellow and brown

Segment of a water-worn boulder with very smooth, almost polished outer surface showing the compact and homogeneous character of the mineral. The brown band which runs diagonally across the polished face of the piece is as prominent on the water-worn exterior, and is seen under the glass to be made up of bundles of radiated acicular crystals of some asbestiform mineral.

Throughout the mass are found occasional inclusions of a black metallic mineral, apparently chromite.

In thin sections the material is seen to be a nearly colorless to pale-green nephrite, stained in places orange-yellow. The texture is that of a fine felt of amphibole scales and blades, through which are scattered acicular crystals and curved prisms of colorless amphibole. These are often cracked across the prisms. The yellow staining seems to be a submicroscopic pigment.

126

## THICK SECTION OF ROUGH MASS

ONOT RIVER, SIBERIA

Dimensions:  $5.19 \times 3.53 \times 3.19$  inches.  $13.2 \times 9.0 \times 8.1$  centimetres. Weight: 3 pounds 10.575 ounces. 1650.580 grammes  
 Specific gravity: 2.9757; hardness: 6.5. *Nephrite*  
 Color: Olive-green enclosing patches of black and delicate veinings of very light yellowish-green

A thick section of a rough, weathered, and partly water-worn mass which shows on the cut faces many reflections due to the schistose structure of the material. Sprinkled through the piece are many

inclusions of brownish chromic iron. The water-worn exterior is a dull dark brown, the lighter and darker tints of which show a reddish-brown ferruginous color.

127

## PART OF BOULDER

SIBERIA

Dimensions:  $2.72 \times 2.69 \times 1.56$  inches.  $6.9 \times 6.8 \times 4.0$  centimetres. Weight: 10.279 ounces. 291.410 grammes  
 Specific gravity: 3.0110; hardness: 6.5. *Nephrite*  
 Color: Very dark green with veinings of light yellowish-green

Part of segment of a boulder with four cut faces, and a weathered water-worn surface colored a pale gray-green with a faint shimmer. The material is translucent and remarkably homogeneous and com-

act, with a schistose structure that is very apparent on the cut surfaces. No iron oxidation is visible, and there is a remarkable freedom from all inclusions.



128

SEGMENT OF BOULDER

SIBERIA

Dimensions: 8.0 × 3.59 × 1.5 inches. 20.3 × 9.1 × 3.7 centimetres. Weight: 2 pounds 5.782 ounces. 1071.11 grammes  
Specific gravity: 3.0125; hardness: 6.5. *Nephrite*  
Color: Olive-green with cloudings and specks of black. The weathered surface shows light gray with patches of darker shades of gray

Segment of a much-weathered boulder, on the outer surface of which no oxidation has taken place. The material is translucent, very homogeneous and compact, with a horny, schistose structure, and showing some inclusions of a reddish-brown mineral, apparently garnet.

129

PART OF BOULDER

SIBERIA

Dimensions: 4.34 × 3.06 × 2.91 inches. 11.0 × 7.8 × 7.4 centimetres. Weight: 2 pounds 8.06 ounces. 1135.71 grammes  
Specific gravity: 3.0182; hardness: 6.5. *Nephrite*  
Color: Very dark green mottled with olive-green

A truncated segment of a boulder which shows on its natural surface two different degrees of water action; the face which lay uppermost in the river-bed and received most of the pounding and grinding being entirely covered with a light-gray discoloration, while on the other face, the one on which the boulder lay, the dark green of the mineral is obscured only in parts by the light gray.  
The material is subtranslucent and very homogeneous and com-

pact, with a schistose, horny structure which is beautifully shown on the rough surfaces left when the specimen was sawn and broken from the rest of the boulder. Several light, almost white, fractures run almost entirely through the piece.  
On the unobscured face of the natural surface some inclusions of a brownish mineral resembling rutile are visible.

130

SECTION OF ROUGH MASS

SIBERIA

Dimensions: 6.75 × 4.25 × 3.81 inches. 17.2 × 10.8 × 9.7 centimetres. Weight: 5 pounds 8.432 ounces. 2507.050 grammes  
Specific gravity: 2.9758; hardness: 6.5. *Nephrite*  
Color: Dark olive-green with blotches and irregular veinings of almost black, and a patch of very light green. The weathered surface is brown shading into almost black

A thick section of a rough mass, with one flat dark-brown, almost black, weathered side and two parallel polished faces. The black on the surface of the flat side does not extend to a greater depth than one half to one millimetre. The fractured surfaces show the characteristic splintery fracture of the nephrite, which is bedded parallel to the flat side. Chromite is sparingly present.

Two microsections studied by Iddings proved to have slightly different characters. One he found to be a fine felt of amphibole flakes, with coarser fan-like aggregations of a micaceous mineral having the optical properties of a colorless chlorite, probably a variety of clinochlore like that found in the Jordansmühl specimen No. 134. The other microsection does not exhibit any of the chloritic mineral, but is a fine felt of amphibole with bundles of larger amphibole blades and crystals.

Clarke's calculation of Foote's analysis, given below, shows the presence in the specimen of nearly twenty-four per centum of clinochlore.

	(NaK)AlSi <sub>3</sub> O <sub>8</sub>	Clinochlore	R'SiO <sub>3</sub>	Unaccounted for		
Silica . . . . .	49.55	.70	8.64	39.28	.93	
Alumina . . . . .	5.20	.30	4.90			
Chromic oxide . . . . .	.24				.24	
Ferrie oxide . . . . .	.78				.78	
Ferrous oxide . . . . .	4.44		4.44			
Manganous oxide . . . . .	.07		.07			
Nickel protoxide . . . . .	.18		.18			
Lime . . . . .	9.54		9.54			
Magnesia . . . . .	24.78	7.68	17.10			
Potash . . . . .	.05	.05				
Soda . . . . .	.15	.15				
Water at 100° . . . . .	.28				.28	
Water at 180° . . . . .	.19				.19	
Water at 180°+ . . . . .	4.21	2.60			1.61	
	99.66	1.20	23.82	70.61	4.03	

Abstract

Nephrite . . . . .	70.61	Reduction very uncertain;
Clinochlore . . . . .	23.82	bases are too high for the silica
R'AlSi <sub>3</sub> O <sub>8</sub> . . . . .	1.20	in nephrite. Alteration prod-
Unaccounted for . . . . .	4.03	ucts other than clinochlore
	99.66	may be present.

This material was subjected to three separate tests to determine its strength or power of resistance, viz., by impact, compression, and tension. The three half-inch cubes tested by impact withstood on the average 43 blows from a one-kilogramme hammer falling one centimetre for the first blow, and an increased distance of one centimetre for each succeeding blow of the hammer, the average final blows being 43,000, and the average total energy expended, 960,000 centimetre-grammes.

In the compression tests, the average ultimate strength of the two cubes successively placed in the Emery hydraulic testing-machine was 44,557 pounds per square inch. In the tension tests it required a pull of 2724 pounds per square inch to disrupt the specimen tested.

This is one of the specimens of nephrite which Permikin, the noted mine owner and explorer, brought to St. Petersburg from Siberia about the middle of the nineteenth century. He had been sent out by the Imperial Court Ministry to find nephrite for the stone-cutting establishment at Peterhof, just as Jaczewski was sent out, in 1896, to search for a monolith for a sarcophagus for the late Alexander III.



131

## SECTION OF BOULDER

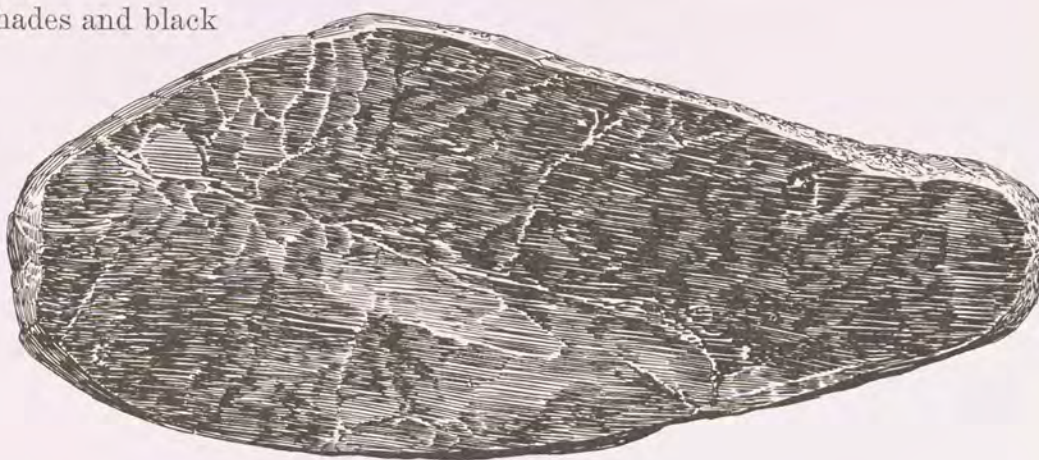
SIBERIA

Dimensions:  $5.75 \times 2.5 \times .31$  inches.  $14.6 \times 6.3 \times .8$  centimetres. Weight: 5.151 ounces. 146.032 grammes  
 Specific gravity: 2.9985; hardness: 6.5. *Nephrite*  
 Color: Spinach-green heavily clouded with darker shades and black

Cross-section of a boulder from the river Wilna, Siberia. The material is translucent, with several long, narrow veins, three millimetres in width, with a pearl-like shimmer. It is compact and very homogeneous, has a tough, splintery structure, and shows inclusions of a dark metallic substance, probably chromic iron.

The outer edges show the original water-worn surface of the boulder.

From the Siberian collection of Dr. A. B. Meyer of Dresden.



132

## OBLONG FRAGMENT

ONOT RIVER, SIBERIA

Dimensions:  $3.25 \times 1.75 \times .72$  inches.  $8.3 \times 4.4 \times 1.8$  centimetres. Weight: 5.680 ounces. 161.027 grammes  
 Specific gravity: 3.0057; hardness: 6.5. *Nephrite*  
 Color: Spinach-green traversed by long, wavy black veins

An oblong fragment with one polished face and one rough weathered face showing a broken vein with parallel raised markings almost suggesting gliding planes, or a slickenside surface. The material is translucent, homogeneous and compact.

Presented to the Collection by Professor L. von Jaczewski of St. Petersburg.

133

## PART OF BOULDER

SIBERIA

Dimensions:  $7.44 \times 3.75 \times 2.59$  inches.  $18.9 \times 9.5 \times 6.6$  centimetres. Weight: 4 pounds 3.360 ounces. 1909.722 grammes  
 Specific gravity: 2.9877; hardness: 6.5. *Nephrite*  
 Color: Very dark brownish-green mottled with black and olive-green

Part of a boulder, the exterior water-worn surface of which is very smooth in part and almost black, and shows very little superficial staining or alteration. The material is translucent, homogeneous and compact, and is seen by transmitted light to be made up of dull

yellow-green intermingled with irregular veinings of a darker green, with occasional included black metallic crystals of chromic iron. The polished surface shows very few internal fractures.

134

## MAMMOTH BLOCK

JORDANSMÜHL, SILESIA, GERMANY

Color: Various shades of green, from very light opaque to dark, almost black

A huge block weighing 2140 kilometres, discovered by Mr. George F. Kunz in 1899 in the stone-quarry on the property of Lieutenant Herr von Kriegsheim, near the village of Jordansmühl.

Several specimens have been detached from different parts of the block and subjected to various tests:

A. Fragment: Color, impure gray mottled with pale green and dark, almost black, spots. On the fractured surfaces the splintery, horny structure of nephrite was well shown, but between the laminae a slight alteration was apparent. The hardness varied from 6.5 to 5, thus giving undoubted evidence of alteration. Specific gravity, 2.8893.

In the microscope Iddings found the material to be a fibrous nephrite with very fine texture. There are occasional small areas of a colorless mineral, apparently fibrous or in minute scales, having lower refraction than nephrite and about the same double refraction as quartz, possibly a little higher. It appears nearly uniaxial in some cases and distinctly biaxial in others, is optically positive, and is probably a chloritic mineral, most likely clinochlore. There are also occasional spots formed of a cloud of opaque dot-like particles, and some that are possibly magnetite.

A chemical analysis of this material was made by Dr. George Steiger of the Geological Survey, Washington, D. C., and is here given, with Professor Clarke's calculation of the same.

		Amphibole	R <sup>2</sup> /CaSiO <sub>6</sub>	Unaccounted for
Silica . . . . .	56.39	54.79	1.60	
Alumina . . . . .	1.63		1.63	
Ferrie oxide . . . .	1.72		1.72	
Ferrous oxide . . . .	3.70	3.70		
Manganous oxide . .	.26	.26		
Nickel protoxide . .	.13	.13		
Magnesia . . . . .	24.63	24.63		
Lime . . . . .	7.92	6.43	1.49	
Potash . . . . .	none			
Soda . . . . .	none			
Water below 100° . .	.65			.65
Water above 100° . .	3.42	2.27		1.15
Phosphoric oxide . .	trace			
Titanic oxide . . . .	none			
	100.45	92.21	6.44	1.80

Abstract	
Amphibole . . . . .	92.21
R <sup>2</sup> /CaSiO <sub>6</sub> . . . . .	6.44
Unaccounted for . . .	1.80
	100.45

Amphibole much richer in magnesia than ordinary nephrite. State of water uncertain; part of it may be in decomposition products like tale or serpentine.



Impact, compression, and tensile tests were made on specimens cut from the same part of the mammoth block, with results now to be given:

(a) For the impact tests by Page three half-inch cubes were used. The height of the first was .500 of an inch. In the testing-machine it stood 32 blows, or a final blow of 32,000 centimetre-grammes, the total energy expended in rupturing the cube being 528,000 centimetre-grammes. The height of the second cube was .494 of an inch. It stood 39 blows, or a final blow of 39,000 centimetre-grammes, the total energy expended in breaking it being 780,000 centimetre-grammes. The height of the third cube was .485 of an inch. It stood 37 blows, or a final blow of 37,000 centimetre-grammes, the total energy expended being 703,000 centimetre-grammes. In the first instance the blow was applied parallel to the striation of the material; in the second at an angle of about  $45^\circ$ ; and in the third at right angles.

(b) For the compression tests by Woolson two one-inch cubes were used. The first measured  $1.005 \times 0.995 \times 0.997$  inches; area, 0.992 of a square inch. Tested on bed, and bedded with blotting-paper. Failed without warning, but with a dull, crushing sound (and with the compressometer still attached), at a maximum load of 23,800 pounds, splitting more or less into parallel plates which did not fly apart, and were nearly at right angles to the compression faces. Ultimate strength, 23,992 pounds per square inch. The dimensions of the second cube were  $1.030 \times 1.007 \times 1.011$  inches; area in square inches, 1.018. Tested on bed, and bedded with blotting-paper. Failed without warning at 26,000 pounds, breaking with wedge-shaped fracture and while the compressometer was still attached. The pieces did not fly apart, but held together in cube shape after fracture. Ultimate strength per square inch, 25,540 pounds. Time, 25 minutes.

(c) For the tensile test a specially shaped piece with a thickness of .519 inch stood a pull of 2903 pounds per square inch before fracturing.

B. Slab cut from a part of a big block adjoining that from which the above specimen was taken. The color was somewhat darker and more uniform. Specific gravity, 2.9527—the average of three separate quantities.

Three thin sections were examined microscopically by Dr. Max Bauer, who found in all three fine and coarse material intermingled, but in different ways and in different proportions, so that in each there is a difference in structure.

The first section shows for the most part an exceedingly fine structure. Only in a fairly strong enlargement is it seen to be very short- and fine-fibrous. The soft, more or less strongly curved and bent fibres lie mixed up in all directions, forming a felt-like texture. It contains fairly numerous actinolite prisms. The largest measures two and one half millimetres in length and one half millimetre in thickness, but the majority are small. The long ones are thin and narrow; the thickest relatively short, often no longer than they are thick, in rare instances even broader than long. Invariably the angle of extinction of these prisms, and also of the fine fibres, is low, never exceeding  $15^\circ$ , found in the actinolite. Hardly a single one of these prisms is straight; when they reach any considerable length they are practically all more or less strongly bent, some only once, some several times. Often, too, they are nearly broken, frequently into two or more pieces, and the pieces a little separated from each other, or displaced sideways while still touching. The spaces between them are filled with the fine-fibred mass referred to above. Undulatory extinction is discernible here and there in the prisms themselves. Their unravelling (*Zerfaserung*) is always more or less pronounced. In some cases it does not amount to much, so that only at the ends is there a separation into individual parts; in others it extends along the whole length of the prism, which then changes into a number of thinner bars (*Stäbchen*) which lie closely together, the space between them being filled by the felt-like, finely fibrous mass already referred to, or by longitudinal fibres which have been separated from the prisms. All of these bars have more or less simultaneous extinction with each other, and with the longitudinal fibres lying between them. Often, too, such fibres are loosened from the long lateral edges, and run parallel with the prisms, and finally the whole prism divides into an aggregate of almost parallel long extended fibres, which either form

compact bundles, or are divided into separate parts by small quantities of the fine-fibrous mass referred to. All the fibres of a bundle are extinguished at the same time, and numbers of such bundles lying close together have often practically the same orientation. Between well-preserved actinolite prisms and such nephrite fibre-bundles all kinds of transitions occur. The size of the bundles varies considerably. Some are small, and lie like tufts of wool in the finely fibrous main mass, the edge not being very sharp; or they are larger, reaching even the length of the actinolite prisms, and considerably exceeding their width. They also show the same larger or smaller curve which distinguishes the prisms.

The second section exhibits a much less fine-fibrous structure. It consists of fairly long-fibred tufts or bundles, which are often contorted, and which often contain in the centre a compact kernel consisting of an actinolite prism. These bundles lie for a considerable distance nearly parallel with each other, but from the side they are touched by groups of bundles lying in an entirely different direction. The finest felt-like fibrous mass which plays so great a part in the first section is here almost entirely lacking. In the second section, too, we have to deal with a matted-fibrous, felt-like texture, but the individual fibres and fibre-bundles are all much longer, and also thicker, than in the first. As in this, so in the second section, all kinds of transitions point to the fact that we must see in the fibre-bundles actinolite prisms which have been split up into fibres.

The same structure, but in still coarser development, is found in the third section. Nearly all fibre-bundles still have a compact kernel of actinolite, which also, on its side, is invariably more or less ravelled (*aufgefaseret*) after the manner described above, and consequently in course of transition into the surrounding material, which consists only of fibres. Here the prisms and the accompanying fibre-bundles are in part several times longer than those in the first section. Even in a small enlargement, many of them stretch beyond the field of vision of the microscope. Only a few smaller and finer tufts of fibres, mostly combined into small bodies in the coarser material, lack the compact kernel of actinolite.

The three sections are very light in color, almost colorless, with a greenish tendency. Only single spots are a trifle darker and more decidedly green. Dichroism is not observable. There occurs in spots a small quantity of a brown decomposition material, especially as an infiltration on fissure surfaces and on their clefts and chinks. This material spoils in those places the otherwise perfect transparency of the sections, whose complicated structural conditions are discernible only under polarized light. No other decomposition can be found; the material is perfectly fresh.

The substance of the nephrite is very pure. A few small inclusions are found, which form insignificant aggregates in a few places. There is, further, a small number of very small colorless grains whose substance cannot be determined with certainty. It is the same as what Arzruni believed to have recognized as epidote or titanite in other nephrites, and probably also the same substance as what H. Traube has called epidote or zoisite ("Neues Jahrbuch für Mineralogie Beilage," Band III, 1884, p. 412). Stress should be laid, however, upon the presence of a few, but very isolated, prisms of a colorless augite (diopside), which differ from the actinolite prisms described above in nothing but their great angle of extinction, which was found to measure up to  $37^\circ$ . These augite prisms, which are usually somewhat smaller than the actinolite prisms found in the same section, are, like them, somewhat ravelled at the edges and ends, and, again like them, change into the matted fibre of the nephrite. At all events, the fibres surrounding these diopside remains differ in nothing from those accompanying the actinolite prisms. Traube, too, found pyroxene in the nephrite from Jordansmühl occurring between serpentine and granulite, with this difference, however, that he found it in sufficient quantity to believe himself justified in considering the whole nephrite as a secondary mineral originating in pyroxene. In our sections, the compact grains in the nephrite fibre-bundles are certainly amphibole, as can be seen in the perfect cleavage, occasionally occurring characteristic cross-sections, and the weak angle of extinction.

When we consider as a whole the separate results obtained, there hardly remains room for doubt that the nephrite under discussion was formerly an aggregate of longer and thicker actinolite prisms, with an admixture of some, but probably not many, diopside prisms.



The forces of a subsequent mountain movement caused in this aggregate a far-reaching dynamo-metamorphic change, which is recognizable in the bending and breaking of the prisms, in their raveling favored by the cleavage, in the undulatory extinction—in short, in a noticeable cataclastic structure. Each fibre-bundle of the nephrite was certainly an actinolite prism which was divided more or less perfectly into single fibres by the pressure of the mountain, a compact bit remaining often in the centre. The same thing happened in the case of the admixed diopside prisms, which, however, in the course of their change into fibres, changed at the same time into amphibole. The dynamic metamorphosis evidently worked with different force on different parts of the piece. At the spot whence the third section was taken the influence was least strong; consequently the actinolite prisms have been preserved here largely in compact condition, only a small portion being completely ravelled. This is the case to a higher degree at the spot from which material for the second section was taken. The compact remainders are here rarer, but the fibre-bundles are not yet very fine. At the place where the first section was made the destruction was most potent, resulting in the formation of that fine and matted-fibrous felt in which but little coarser material has been retained.

A chemical analysis of material taken from this slab was made by Dr. Carl Busz of Münster, Westphalia, Germany, and is here given, with Clarke's reduction appended:

	Amphibole	$R''CaSiO_6$	Unaccounted for
Silica . . . . .	52.58	47.97	4.61
Titanic oxide . .	.12		.12
Alumina . . . .	6.74	6.74	
Ferric oxide . .	2.76	2.76	
Ferrous oxide . .	1.72	1.72	
Manganous oxide	trace		
Lime . . . . .	9.84	5.54	4.30
Magnesia . . . .	21.02	21.02	
Soda . . . . .	.54	.54	
Potash . . . . .	.28	.28	
Water at 100° . .	.21		.21
Water at 180° . .	.19		.19
Water at red heat	3.07	2.51	1.88
Water at blast . .	1.32		
	100.39	79.58	18.41
			2.40

Abstract	
Amphibole . . . .	79.58
$R''CaSiO_6$ . . . .	18.41
Unaccounted for .	2.40
	100.39
Here, again, the amphibole is different from normal nephrite. $R''CaSiO_6$ in excessive amount. Water doubtful. Is serpentine or talc present?	

C. Thick rectangular slab cut from a small piece removed from another part of the mammoth block, and showing greater translucency and a darker, more uniform spinach-green color thickly mottled in parts with very dark green, almost black, patches and occasional large spots of a dark metallic substance. The material is very fine-

grained, has taken a fine polish, and shows the characteristic horn-like texture of nephrite. Hardness, 6.5; specific gravity, 2.9960. One face and one edge have been polished; the rest of the piece shows the original weathering of the mass.

Two microsections were examined by Iddings, who reports as follows:

In thin section the rock is transparent and colorless. It consists of an aggregation of microscopic scales and fibres of amphibole (nephrite), and patches of subparallel fibres in all positions. There are a few larger patches of the same. Some scattered acicular crystals of colorless amphibole (nephrite) with characteristic cross-section and prismatic cleavage. The refraction of all these forms of amphibole is alike. No chromite occurs in the sections.

Foote's chemical analysis of this material is here given, with Clarke's reduction:

	$R'R''Si_2O_6$	$(R_2R')SiO_3$
Silica . . . . .	56.74	3.51
Alumina . . . . .	.93	.93
Chromic oxide . . . . .	.13	.13
Ferric oxide . . . . .	.75	.75
Ferrous oxide . . . . .	3.64	3.64
Manganous oxide . . . . .	.06	.06
Nickel protoxide . . . . .	.09	.09
Magnesia . . . . .	21.75	21.75
Lime . . . . .	13.09	13.09
Soda . . . . .	.22	.22
Potash . . . . .	trace	
Water at 100° . . . . .	.45	
Water at 180° . . . . .	.25	
Water above 180° . . . . .	1.72	.20
	99.82	5.74
		93.01

Abstract	
$R'R''Si_2O_6$ . . . . .	5.74
Nephrite, $(R_2R')SiO_3$ .	93.01
Water in excess . . . .	1.07
	99.82
$R'_2 = H$ with bases; that is, water.	

Before this huge block of nephrite was removed from the rock-bed, several pieces of considerable size were broken off for chemical analysis and microscopical study. The latter is given under Nos. 135, 138, and 140. Two analyses were made by Dr. Walter Hertz, assistant in the Chemical Institute of the University of Breslau, and are here given: I of light-green, II of dark-green material:

	I	II
Silica . . . . .	57.34	55.69
Alumina . . . . .	2.35	1.68
Ferrous oxide . . . . .	5.45	5.93
Lime . . . . .	13.98	14.04
Magnesia . . . . .	19.89	20.68
Water . . . . .	.96	2.12
	99.97	100.14

Dimensions:  $5.72 \times 3.16 \times 2.22$  inches.  $14.5 \times 8.0 \times 5.6$  centimetres. Weight: 1 pound 7.948 ounces. 678.905 grammes  
Specific gravity: 2.8994; hardness: 6.5. *Nephrite*  
Color: Light green mottled with various dark shades to almost black

A large broken fragment, to one side of which small silver-gray particles of a foliated talcose schist adhere. On one side the specimen has been altered into a white fibrous asbestiform substance.

Microscopically it is seen to consist of nephrite in fibres, flakes, and banded crystals irregularly aggregated with larger crystals, in some cases broad and grading into the fibrous forms, in others long acicu-

lar prisms. Cross-sections of prisms show the characteristic amphibole cleavage, and prismatic faces modified by orthopinacoid and less pronounced clinopinacoid. There is a small amount of an opaque, black mineral, probably magnetite, also minute microscopic brown particles included in the larger amphiboles.



136

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $3.91 \times 2.44 \times .47$  inches.  $9.9 \times 6.2 \times 1.2$  centimetres. Weight: 4.066 ounces. 115.270 grammes  
 Specific gravity: 2.9786; hardness: 6.5. *Nephrite*  
 Color: Light green with mottlings of black

A thin fragment, polished on one face across the bedded structure of the mineral. The material is only subtranslucent, but admits of a fair polish.

The larger part of the mass has a hardness of 6.5, but throughout this are many small patches ranging from 5 to 5.5, due probably to some alteration. It resembles some forms of New Zealand nephrite.

137

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $3.38 \times 2.53 \times .91$  inches.  $8.6 \times 6.4 \times 2.3$  centimetres. Weight: 6.608 ounces. 187.340 grammes  
 Specific gravity: 2.9356; hardness: 6.5. *Nephrite*  
 Color: Olive-green grading down to a lighter green which merges into a silvery white; also a few black patches

A rough fragment, polished on one side, and bedded with the flat side of the mass. The material is translucent. In many places it is almost micaceous, but one corner has the appearance of cerolite without the brilliancy and structure of thin micaceous spangles. The hardness is not uniform, ranging from 5 to 6.5. The harder portions on the polished surface are raised above the surrounding mass and

present an arborescent structure filled in with altered nephrite or some other mineral, probably a change from it. Dark, almost black, patches are surrounded by whiter veinings, and through the greater part of this is the raised arborescent structure. The material does not admit of a high polish.

138

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $2.91 \times 1.97 \times 1.06$  inches.  $7.4 \times 5.0 \times 2.7$  centimetres. Weight: 3.912 ounces. 110.922 grammes  
 Specific gravity: 2.9719; hardness: 6.5. *Nephrite*  
 Color: A mixture of spinach-green with light grayish-green

A rough fragment with one polished face. The material is translucent and shows the characteristic splintery structure of nephrite.

In microstructure it is almost identical with Nos. 135 and 140, which consist of nephrite in fibres, flakes, and banded crystals irregularly aggregated with larger crystals, in some cases broad and grading into the fibrous forms, in others, long acicular prisms. Cross-

sections of prisms show the characteristic amphibole cleavage, and prismatic faces modified by orthopinacoid and less pronounced clinopinacoid. There is a small amount of an opaque, black mineral, probably magnetite; also minute microscopic brown particles included in the larger amphiboles.

139

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $2.75 \times 2.38 \times .5$  inches.  $7.0 \times 6.0 \times 1.3$  centimetres. Weight: 3.568 ounces. 101.147 grammes  
 Specific gravity: 2.9800; hardness: 6.5. *Nephrite*  
 Color: Spinach-green mottled with lighter shades of green

A fractured specimen, broken parallel with the bedded structure and polished on one face. The mass is filled with many minute fissures, and in color, as well as in other respects, it greatly resembles the *pounamu* of New Zealand. In the unfractured parts it is very homogeneous and compact.

Microscopically it consists of nephrite in fibres, flakes, and banded crystals irregularly aggregated with larger crystals, in some cases

broad and grading into the fibrous forms, in others, long acicular prisms. Cross-sections of prisms show the characteristic amphibole cleavage, and prismatic faces modified by orthopinacoid and less pronounced clinopinacoid. There is a small amount of an opaque, black mineral, probably magnetite; also minute microscopic brown particles included in the larger amphiboles.

140

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $4.81 \times 2.59 \times 2.41$  inches.  $12.2 \times 6.6 \times 6.1$  centimetres. Weight: 1 pound 4.908 ounces. 592.750 grammes  
 Specific gravity: 2.9719; hardness: 6.5. *Nephrite*  
 Color: Mottled spinach-green and lighter green

A large rough mass showing the weathered surface of an apparent vein. Most of the exterior is a grayish white, due to contact with altered amphibole. The structure is splintery and horn-like, but in parts fibrous columnar. The hardness of the unaltered parts is normal, 6.5, but on the altered surface it is not more than 3.

Microscopically it is seen to consist of nephrite in fibres, flakes, and banded crystals irregularly aggregated with larger crystals, in some

cases broad and grading into the fibrous forms, in others, long acicular prisms. Cross-sections of prisms show the characteristic amphibole cleavage, and prismatic faces modified by orthopinacoid and less pronounced clinopinacoid. There is a small amount of an opaque, black mineral, probably magnetite; also minute microscopic brown particles included in the larger amphiboles.



141

## SECTION OF CRUDE BLOCK

JORDANSMÜHL, SILESIA

Dimensions:  $3.94 \times 3.28 \times 1.19$  inches.  $10.0 \times 8.3 \times 3.0$  centimetres. Weight: 13.302 ounces. 377.125 grammes  
 Specific gravity: 2.9451; hardness: 6.5. *Nephrite*  
 Color: Spinach-green veined with black

Thick section of a rough mass of translucent, compact material with tough, splintery texture, breaking into irregular horn-like fractures, many of which are visible. The black is due to inclusions of chromic iron—magnetite.

Microscopically the specimen is seen to consist of numerous compact prisms of amphibole which grade into fibres in nearly parallel groups, and cross one another in several directions. They give the rock a distinctly marked microstructure.

Walden's analysis and Clarke's reduction gave the following results:

	AlNaSi <sub>2</sub> O <sub>6</sub>	FeNaSi <sub>2</sub> O <sub>6</sub>	Nephrite		
Silica . . . . .	54.44	13.93	4.82	35.69	
Alumina . . . . .	5.92	5.92			
Ferric oxide . . . . .	3.72		3.15		
Ferrous oxide . . . . .	2.56			2.56	
Manganous oxide . . . . .	.22			.22	
Magnesia . . . . .	16.79			16.79	
Lime . . . . .	7.51			7.51	
Soda . . . . .	4.64	3.60	1.04		
Potash . . . . .	.28		.28		
Water . . . . .	4.12			.04	
	100.20	23.45	9.29	62.81	

Abstract			
Nephrite . . . . .	62.81		Al and Fe probably in glaucophane and riebeckite molecules respectively.
FeNaSi <sub>2</sub> O <sub>6</sub> . . . . .	9.29		
AlNaSi <sub>2</sub> O <sub>6</sub> . . . . .	23.45		
	95.55		
Ferric oxide . . . . .	.57	} Unaccounted for	
Water . . . . .	4.08		
	100.20		

From the collection of Dr. A. B. Meyer of Dresden.

142

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $3.38 \times 2.84 \times 2.75$  inches.  $8.6 \times 7.2 \times 7.0$  centimetres. Weight: 1 pound 7.944 ounces. 678.823 grammes  
 Specific gravity: 2.9330; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A fragment found in the quarry at Jordansmühl, at a distance of about one hundred feet from the place where the mammoth block (No. 134) lay.

The material is translucent to subtranslucent, with an uneven stratification. The piece is cut transversely across the stratification,

and shows that the mass from which it was broken was thus stratified. On the outer surface there is a serpentine-like mineral resembling pierolite, which is softer than the surrounding material. On one side the lighter veins are undoubtedly this mineral. The piece admits of only a medium polish.

143

## FRAGMENT

JORDANSMÜHL, SILESIA

Dimensions:  $1.31 \times .44 \times .28$  inches.  $3.3 \times 1.1 \times .7$  centimetres. Weight: .190 ounce. 5.388 grammes  
 Specific gravity: 2.9972; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A small fragment from a piece of the mammoth block (No. 134) selected by the discoverer, Mr. George Frederick Kunz, as a standard of the average material of that block, and from which several trying-points were made by him for making comparative tests of hardness of other nephrites.

144

## FRAGMENT

REICHENSTEIN, SILESIA

Dimensions:  $2.75 \times 1.56 \times .78$  inches.  $7.0 \times 4.0 \times 2.0$  centimetres. Weight: 3.744 ounces. 106.150 grammes  
 Specific gravity: 2.8888; hardness: 6.5. *Nephrite*  
 Color: Sage-green; olive on the weathered surface

A crude fragment broken from a rock with a somewhat weathered surface. The material is subtranslucent, and very compact and homogeneous, with a splintery, horn-like structure which is well shown on the fractured surface. It is traversed by numerous internal fractures due to the bedding, and some dark, apparently brown, stainings.

When examined in thin sections under the microscope, it is seen to be an extremely fine-fibrous and scaly aggregate of amphibole. The specific gravity seems a trifle low, but there can be no doubt as to the material being nephrite.



145

## SMALL FRAGMENT

REICHENSTEIN, SILESIA

Dimensions:  $2.03 \times 1.47 \times .47$  inches.  $5.2 \times 3.7 \times 1.2$  centimetres. Weight: .843 ounce. 23.896 grammes  
 Specific gravity: 3.0971; hardness: 6.5. *Nephrite*  
 Color: Light olive, dark gray, and shades of light to dark brown

A small fragment of a rock-mass mined at Reichenstein, Silesia, in Germany. The grayish color of the piece is due largely to the presence of minute crystals of arsenopyrite, with which all material from this locality is impregnated. On the broken surface the splintery,

horny texture is very apparent, but the mass itself does not seem to be very homogeneous or compact. Adhering to one side of the specimen is a thin vein of a yellow translucent substance, apparently precious serpentine.

146

## FRAGMENT

REICHENSTEIN, SILESIA

Dimensions:  $2.59 \times 2.28 \times 1.06$  inches.  $6.6 \times 5.8 \times 2.7$  centimetres. Weight: 7.012 ounces. 198.787 grammes  
 Specific gravity: 3.0553; hardness: 6.5. *Nephrite*  
 Color: Dark grayish-green to light greenish-gray

A rough fragment with one face showing saw-marks. The material is a dark grayish-green with parallel veinings of light greenish-gray and distorted foldings of lighter material, probably also nephrite. Throughout the entire mass there are many minute included crystals of arsenopyrite, a characteristic of the material from Reichenstein.

The splintery, bedded structure is apparent. In part this is homogeneous.

Microscopically it is seen to consist of a fine-grained aggregation of minute anhedral amphibole with scattered microscopic grains of arsenopyrite.

147

## ROUGH FRAGMENT

REICHENSTEIN, SILESIA

Dimensions:  $3.16 \times 2.28 \times 1.75$  inches.  $8.0 \times 5.8 \times 4.5$  centimetres. Weight: 15.002 ounces. 425.320 grammes  
 Specific gravity: 3.9596; hardness: 6.5. *Nephrite*  
 Color: Dull olive-green and steel-gray

A crude fragment with one cut face. The material is translucent and very compact, thickly interspersed with minute crystals and a radiated plumose aggregation of arsenopyrite, a characteristic accompaniment of the jade found in the Reichenstein region. On one of the rough sides nodular aggregations of jade surrounded by broken crystals of arsenopyrite are visible, and impregnated in the fracture at one side of the cut surface there is a black mineral staining of some

kind. The outlines of the crystal faces of the arsenopyrite are very perfect.

Iddings's microscopical examination of thin sections showed that the specimen consists of fibrous amphibole with schistose structure and contains considerable arsenopyrite in lenticular masses.

A very beautiful specimen. The high specific gravity is due entirely to the abundance of the arsenopyrite, the specific gravity of which is 5.9.

148

## FRAGMENT

SCHWEMSAL, DÜBEN, GERMANY

Dimensions:  $1.19 \times 1.03 \times .59$  inches.  $3.0 \times 2.6 \times 1.5$  centimetres. Weight: .568 ounce. 16.098 grammes  
 Specific gravity: 3.0209; hardness: 6.5. *Nephrite*  
 Color: Olive-green

Fragment of a smooth polished block of considerable size found in the peat-bog of Schwemsal, near Düben, Prussian Saxony, and described in 1815 by Breithaupt.

The material is homogeneous and compact, and in part translucent, with a splintery, horn-like texture which is beautifully shown on the rough surface.

Breithaupt determined the specific gravity of his specimen to be 2.989, and made some experiments with it. He found that "before the blowpipe it effervesced rather strongly at first, but fused, with the development of much gas, to a beautiful perfect transparent glass bead of pistachio-green."

Microscopical examination by Iddings of thin sections shows that the nephrite consists of minute flakes and fibres of amphibole in spherulitic bundles and patches.

Fischer held that this block, like several others found in Europe, had been brought by early man from Siberia or Turkistan, and accidentally lost, a view which was vigorously and successfully opposed, on geological grounds, by Credner, who showed that it was merely an erratic block which had originated probably in Sweden and had been transported to Germany by glacial ice. Fischer's theory has been still further weakened by the later discovery in Silesia of jade *in situ*.



149

## FRAGMENT

LENGYEL, TOLNA, HUNGARY

Dimensions: .56 × .34 × .28 inch. 1.5 × .9 × .7 centimetres. Weight: .057 ounce. 1.6242 grammes  
 Specific gravity: 3.3242; hardness: 7.0. *Jadeite*  
 Color: Light sage-green

A small piece of jadeite, part of a larger specimen in the Imperial Museum of Natural History, Vienna, Austria, cut from an axe found in 1885 near the dwellings of an ancient settlement in the forest of Lengyel, Tolna, Hungary, now in the possession of Count Appony. It was originally 7.4 centimetres in length and 4 centimetres in breadth. Along with it were found splinters of obsidian and jasper, many stone implements, jasper knives, a perforated whorl, a perforated earthen ball, two bronze plates covered with patina, earthen spoons, etc.

The material is translucent where cut, except on the exposed outer edge, where it is more opaque and lighter in color, due possibly to heat. It is quite homogeneous, and shows a crystalline structure in which the crystals are below the medium in size as compared with other jadeites.

Presented to the Collection by Professor F. Berwerth of the Imperial Museum of Natural History, Vienna.

150

## FRAGMENT

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 4.09 × 1.56 × .47 inches. 10.4 × 4.0 × 1.2 centimetres. Weight: 2.890 ounces. 81.954 grammes  
 Specific gravity: 2.9823; hardness: 6.5. *Nephrite*  
 Color: Olive-green and dark brown with a brilliant sheen

A long thin fragment with one smooth edge showing saw-marks, and one thin irregular edge which curves abruptly to what in all probability was the cutting edge of a knife or hatchet, which had been split longitudinally in two, parallel with its broadest face. Notwithstanding its crudeness, the piece could still be used with good effect as a knife. It is here treated as a mineralogical specimen of highly schistose nephrite, opaque on the flat face, but translucent on the

thinnest edge. It shows a weathered surface on one face and a remarkably brilliant pearly sheen which is probably due to the minute fractures of which this exfoliated surface is made up. On the thinner edge there are scoriæ and other evidences of burning.

The specimen was found among the remains of one of the pile-dwellings of Lake Neuchâtel.

151

## PEBBLE

STATE OF WASHINGTON, U. S. A.

Dimensions: 3.68 × 2.72 × 1.56 inches. 9.3 × 6.9 × 4.0 centimetres. Weight: 1 pound 2.364 ounces. 620.635 grammes  
 Specific gravity: 3.0997; hardness: 6.5. *Nephrite*  
 Color: Black with light-gray flecks distributed throughout

A pebble found by Harlan S. Smith, of the Jesup North Pacific Expedition of 1897, on the beach near Marietta, mouth of the Nooksak River, Washington. The material is faintly subtranslucent.  
 Presented to the Collection by Morris K. Jesup, Esq.

152

## PEBBLE

BRITISH COLUMBIA

Dimensions: 3.94 × 2.44 × 1.19 inches. 10.0 × 6.2 × 3.0 centimetres. Weight: 14.479 ounces. 410.502 grammes  
 Specific gravity: 3.0029; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A pebble found by Harlan S. Smith, of the Jesup North Pacific Expedition of 1897, on top of a sand-hill between the Fraser and Thompson rivers, Lytton, British Columbia.

The material is translucent and very compact. The piece is much fractured, showing that originally it was part of a disrupted or frac-

tured mass. While these fractures and laminations contain impurities, the material itself is very free from inclusions. It is susceptible of a high polish.

Presented to the Collection by Morris K. Jesup, Esq.

153

## CRUDE FRAGMENT

ALASKA

Dimensions: 3.78 × 2.28 × 2.12 inches. 9.6 × 5.8 × 5.4 centimetres. Weight: 11.148 ounces. 316.060 grammes  
 Specific gravity: 2.9487; hardness: 6.5. *Nephrite*  
 Color: Sage-green

A much-weathered fractured mass from the exterior of a rock-mass, showing an apparent slickensides surface, being foliated externally by rubbing or gliding. The structure is strongly foliated, and the fracture splintery. In part it is very fine-grained, compact, and tenacious; in other parts the foliations are very coarse. These foliations are well shown on the cut and polished surfaces. At one end the



specimen is entirely altered to a white, almost steatitic mass with a hardness of not over 2. This alteration may be due to weathering, or perhaps to the action of fire. A decided aluminous odor is perceptible when the specimen is breathed upon.

Under the microscope the material is found to be an aggregation of extremely fine fibres that lie parallel to one another and have been bent into contorted and crenulated bands. There is some clouding of the material, which is white by incident light and yellowish by transmitted light. In places the fibres are less crinkled and the substance is nearly transparent, and the double refraction, as shown by the interference colors, is more uniform, but there is some mottling. Throughout much of the section there is aggregate polarization, indicating very minute confused fibres. The thin section cut across the fibres exhibits less crinkling and a less fibrous texture, and indicates that the fibres are flattened or bladed. The nephrite is very free from inclusions of other minerals. It is shown by the analysis given below to be very pure nephrite, having the composition of tremolite with less than four per centum of ferrous oxide.

The analysis by Foote, with reduction by Clarke, is as follows:

	Jadeite	R'' <sub>2</sub> CaSiO <sub>6</sub>	Nephrite		
Silica . . . . .	57.09	.81	.41	55.87	
Alumina . . . . .	.53	.34	.19		
Ferric oxide . . . . .	.81		.81		
Ferrous oxide . . . . .	3.98			3.98	
Magnesia . . . . .	22.28			22.28	
Lime . . . . .	11.75		.38	11.37	
Soda . . . . .	.21	.21			
Water . . . . .	3.57			2.08	
	100.22	1.36	1.79	95.58	
					Abstract
				Nephrite . . . . .	95.58
				Jadeite . . . . .	1.36
				R'' <sub>2</sub> CaSiO <sub>6</sub> . . . . .	1.79
				Excess water . . . . .	1.49
					100.22

The specimen was obtained in the vicinity of Jade Mountain, Alaska, and was presented to the Collection by the U. S. National Museum.

154

SMALL FRAGMENT

ALASKA

Dimensions: 2.0 × 1.09 × .78 inches. 5.1 × 2.8 × 2.0 centimetres. Weight: 1.401 ounces. 39.7215 grammes  
Specific gravity: 2.9887; hardness: 6.5. *Nephrite*  
Color: Light olive-green

A small rough, weathered fragment with one smooth face showing the saw-marks and the fracture made in separating it from a larger piece.

In structure the material is coarsely bedded, the surfaces of the layers minutely crinkled and faulted, resulting in many light-yellow flaws on the exterior. The sawed surface is transverse to the bedding, and shows the interior of the specimen to be unexpectedly compact and homogeneous. Fracture fibrous.

155

CRUDE FRAGMENT

JADE MOUNTAIN, ALASKA

Dimensions: 3.31 × 1.47 × 1.19 inches. 8.4 × 3.7 × 3.0 centimetres. Weight: 3.698 ounces. 104.840 grammes  
Specific gravity: 2.9604; hardness: 6.5. *Nephrite*  
Color: Light olive-green mottled with black specks

A crude fragment with two cut and polished surfaces. On the weathered surfaces it shows contact markings with slight traces of slickensides; is coarsely foliated in part, the foliations enclosing rounded protuberant masses. At the cut, polished end it is seen to be made up of a number of irregular veinings which are in part very compact and tenacious.

The piece is more or less stained with small brownish stains, probably due to the alteration of some included mineral. It has a decided aluminous odor when breathed upon.

Under the microscope the material is seen to consist of confused fibres of amphibole, extremely minute, crinkled and contorted in some places, in streaks of parallel fibres in others. The fibres are so minute that they overlie one another in the thin section and produce aggregate polarizations between crossed nicols. It is traversed by short, crooked cracks containing dark coloring matter. The nephrite is stained yellow, with streaks of brown.

Clarke's reduction of the chemical analysis is here appended:

	Jadeite	R'' <sub>2</sub> CaSiO <sub>6</sub>	Nephrite		
Silica . . . . .	57.02	.85	.58	55.59	
Alumina . . . . .	.70	.36	.34		
Ferric oxide . . . . .	1.04		1.04		
Ferrous oxide . . . . .	4.33			4.33	
Magnesia . . . . .	21.56			21.56	
Lime . . . . .	12.63		.54	12.09	
Soda . . . . .	.22	.22			
Water . . . . .	3.01			2.00	
	100.51	1.43	2.50	95.57	
					Abstract
				Nephrite . . . . .	95.57
				Jadeite . . . . .	1.43
				R'' <sub>2</sub> CaSiO <sub>6</sub> . . . . .	2.50
				Excess water . . . . .	1.01
					100.51



156

## FRAGMENT

KOTZEBUE SOUND, ALASKA

Dimensions:  $2.56 \times 1.5 \times .5$  inches.  $6.5 \times 3.8 \times 1.3$  centimetres. Weight: 1.847 ounces. 52.3705 grammes  
 Specific gravity: 3.0044; hardness: 6.5. *Nephrite*  
 Color: Very dark sage-green

A fragment, rough on one side, but elsewhere smooth, showing sawing and grinding facets which indicate that it is part of an implement of some kind. The material is translucent and very compact and homogeneous, with splintery fracture. The structure is lamellar and splintery on the bedded side. Some of the surface fractures show a brown staining.

157

## LARGE PEBBLE

SULPHUR CREEK, YUKON, CANADA

Dimensions:  $3.91 \times 2.47 \times 1.5$  inches.  $9.9 \times 6.3 \times 3.8$  centimetres. Weight: 1 pound 1.256 ounces. 489.212 grammes  
 Specific gravity: 3.0133; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with lighter and darker mottlings

A water-worn pebble found in Sulphur Creek, a tributary of Indian River, about forty miles from Dawson, the chief town of the Yukon district of Canada, and the centre of the mining industry of the Klondike region. The piece exhibits the polishing and scratches of a glacial water-worn boulder. Around the sides are a number of inclusions, apparently white, probably due to a less compact mineral showing through the more homogeneous mineral, or perhaps to an internal fracturing.

158

## SECTION OF ROUGH BLOCK

JADE MOUNTAIN, ALASKA

Dimensions:  $5.91 \times 3.81 \times 3.38$  inches.  $15.0 \times 9.7 \times 8.6$  centimetres. Weight: 3 pounds 9.953 ounces. 1642.970 grammes  
 Specific gravity: 2.9747; hardness: 6.5. *Nephrite*  
 Color: Olive-green interspersed with veinings and spots of black

An end-section of a large, rough, slightly weathered block which weighed over eighteen pounds, obtained in July, 1886, by Lieutenant-Commander George E. M. Stoney, U. S. N., from a native Alaskan at a village near Jade Mountain, which is situated in latitude  $67^{\circ} 5'$  north and longitude  $158^{\circ} 15'$  west.

The whole block was apparently fractured out of the original rock-

bed by the native medicine-men, to whom alone, according to Stoney, the privilege of quarrying jade belongs.

The material is translucent and compact, but is permeated by many small irregular black veins and a few large, almost white, veins, showing internal fractures. The color is otherwise very even and pronounced on the cut surface.

159

## THIN SLAB

NEW ZEALAND (?)

Dimensions:  $4.72 \times 4.12 \times .22$  inches.  $12.1 \times 10.5 \times .6$  centimetres. Weight: 5.737 ounces. 162.647 grammes  
 Specific gravity: 3.0019; hardness: 6.5. *Nephrite*  
 Color: Light green with a mottling of greenish-gray faintly tinged with very light yellow

A thin rectangular slab with fractured ends. The material is translucent, very homogeneous and compact. The entire mass is filled with light-colored splintery veinings and fractures, which give the piece a mottled, clouded appearance. One face has been highly polished.

Microscopically the material is seen to be an aggregation of fibres with a parallel, sometimes curved, arrangement and strongly marked laminated structure, accompanied by crooked cracks. The rock appears to have been crushed or dragged, and the structure indicates a high degree of dynamic metamorphism.

Its chemical composition is shown in the following analysis by Walden, with Clarke's reduction appended:

	Al(NaK)Si <sub>2</sub> O <sub>6</sub>	R'' <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub>	Nephrite		
Silica . . . . .	56.63	2.49	6.40	47.74	
Alumina . . . . .	2.14	1.06	1.08		
Ferrie oxide . . . . .	3.99		3.99		
Magnesia . . . . .	21.69			21.69	
Lime . . . . .	13.41			13.41	
Soda . . . . .	.20	.20			
Potash . . . . .	.69	.69			
Water . . . . .	1.67			.26	
	100.42	4.44	11.47	83.10	

Abstract			
Nephrite . . .	83.10	K is equivalent to Na, and is put in	
R'' <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub> . .	11.47	the glaucophane-like molecule. State	
AlR'Si <sub>2</sub> O <sub>6</sub> . .	4.44	of iron doubtful.	
Excess water .	1.41		
	100.42		



Dimensions:  $3.03 \times 2.44 \times .22$  inches.  $7.7 \times 6.2 \times .6$  centimetres. Weight: 2.464 ounces. 69.865 grammes  
Specific gravity: 3.0103; hardness: 6.5. *Nephrite*  
Color: Seaweed-green

A small thin broken slab of highly translucent, compact and homogeneous material, remarkably free from metallic inclusions of every kind. Part of the original weathered boulder from which the slab was cut is still shown on one edge.

Under the microscope the specimen is seen to consist of an aggregation of fibres in parallel, sometimes curved, arrangement, with a strongly marked laminated structure accompanied by crooked cracks. The rock appears to have been crushed or dragged, and the structure indicates a high degree of dynamic metamorphism.

Its chemical composition is shown in the following analysis by Walden, with reduction by Clarke:

	AlNaSi <sub>2</sub> O <sub>6</sub>	(AlFe) <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub>	Nephrite		
Silica . . . . .	58.14	1.40	4.50	52.24	
Alumina . . . . .	.98	.59	.39		
Ferric oxide . . . .	3.39		3.39		
Ferrous oxide . . . .	.85		.85		
Manganous oxide . .	.22		.22		
Magnesia . . . . .	22.38		22.38		
Lime . . . . .	12.53		12.53		
Soda . . . . .	.36	.36			
Water . . . . .	1.69		1.30		
	100.54	2.35	8.28	89.52	

	Abstract	
Nephrite . . . . .	89.52	
AlNaSi <sub>2</sub> O <sub>6</sub> . . . .	2.35	Nephrite = H <sub>2</sub> Ca <sub>3</sub> Mg <sub>3</sub> (SiO <sub>3</sub> ) <sub>12</sub> or
R <sup>m</sup> <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub> . . . .	8.28	Ca(H <sub>2</sub> Mg) <sub>3</sub> (SiO <sub>3</sub> ) <sub>4</sub> .
Excess water . . . .	.39	
	100.54	

Dimensions:  $7.5 \times 3.53 \times .25$  inches.  $19.1 \times 9.0 \times .7$  centimetres. Weight: 8.931 ounces. 253.183 grammes  
Specific gravity: 3.0114; hardness: 6.5. *Nephrite*  
Color: Rich dark green with beautiful mottlings of light green



Cross-section of an irregularly shaped boulder, of very translucent, compact and homogeneous nephrite, with a characteristic splintery fracture. One half of the outer edge shows all the original water-wearing;

the other half shows more weathering. One face has been highly polished and exhibits a rich oily reflection. The contorted, crinkly, fibrous structure of nephrite is well shown on the polished surface.

Dimensions:  $6.0 \times 2.56 \times 2.03$  inches.  $15.2 \times 6.5 \times 5.2$  centimetres. Weight: 1 pound 12.495 ounces. 807.825 grammes  
Specific gravity: 3.0122; hardness: 6.5. *Nephrite*  
Color: Rich dark green with mottlings of lighter green

Part of a thick cross-section of a boulder, as is shown by the original water-wearing on one side and the rough fractured surface of the other. The material is translucent, very compact and homogeneous, and has taken a high polish. It has transverse fracturing and laminae parallel to the flat length of the mass.

Microscopically it is seen to be an aggregation of fibres with a parallel, sometimes curved, arrangement, and a strongly marked laminated structure accompanied by crooked cracks. The rock appears to have been crushed or dragged, and the structure indicates a high degree of dynamic metamorphism.







No. 160  
SMALL BROKEN SLAB

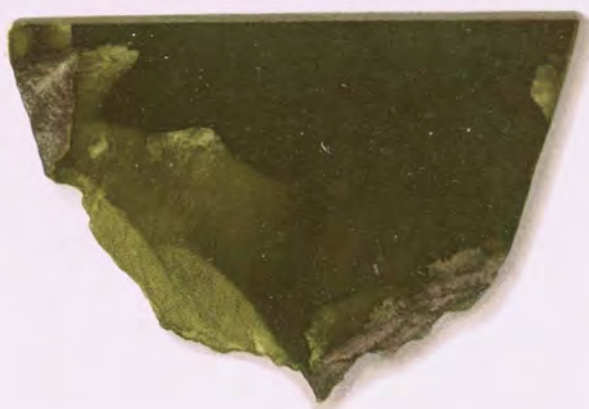
No. 166  
SMALL THIN SLAB

No. 159  
THIN SLAB

No. 162  
FRAGMENT OF BOULDER

NEW ZEALAND NEPHRITE











Its chemical composition is shown by the following analysis by Walden, with reduction by Penfield:

	Glaucoephane $\text{Na}_2\text{Al}_2(\text{SiO}_3)_4$		Riebeckite $\text{Na}_2\text{Fe}_2(\text{SiO}_3)_4$		Nephrite $\text{RSiO}_3$	Nephrite Cal. to 100 %	Theory
Silica . .	57.78	5.52	2.40		49.86	57.62	57.69
Alumina .	2.35	2.35					
Ferrie oxide	1.60		1.60				
Ferrous oxide	2.83				2.83		
Magnesia .	14.80				14.80	25.15	28.85
Lime . . .	15.02				15.02	17.33	13.46
Soda . . .	1.63	1.01	.62				
Potash . .	1.00	.66					
Water . .	2.75				2.45		
	99.76	9.54	4.62		84.96	100.00	100.00

Unaccounted for: Potash, 0.34; water, 0.30 = 0.64.

The resistance of this New Zealand material to stresses of various kinds was clearly shown by the impact, compression, and tensile tests of Page and Woolson.

For the impact test a half-inch cube with an average height of 0.496 inch was used. There was no striation in the cube, and only one

cleavage crack, to which the load was applied at right angles. It stood 85 blows from a one-kilogramme hammer falling a distance of 1 centimetre for the first blow, and an increased fall of 1 centimetre for each succeeding blow before the cube was destroyed, or a final blow of 85,000 centimetre-grammes, the total energy expended in producing fracture being 3,655,000 centimetre-grammes.

For the compression test Woolson used an inch cube cut almost horizontally across the schistose structure of the material. Its dimensions were  $0.955 \times 0.980 \times 0.972$  inch; area, 0.952 square inch. When a load of 65,000 pounds per square inch was reached, cleavage planes which showed in the original cube became whitish, and were decidedly white on one side at 75,000 pounds per square inch. A few white cracks also were visible at this load, but no spalling or breaking occurred until failure, when the load had reached the enormous total of 92,332 pounds per square inch. Two and a half hours were occupied in the experiment, the machine used being the Emery hydraulic testing-machine in use in the engineering laboratory of Columbia University.

The same machine was used by Professor Woolson for the tensile test. The specimen tested had a thickness of 0.517 inch, an average width at the fracture of 0.700 inch, and an area of 0.362 square inch. The fracture took place at an actual pull of 1970 pounds, thus showing an ultimate tensile strength of 5442 pounds per square inch. Though the result is not as striking as in the compression test, it yet shows the great cohesiveness of the material.

163

## FRAGMENT

NEW ZEALAND

Dimensions:  $1.84 \times 1.12 \times .91$  inches.  $4.7 \times 2.9 \times 2.3$  centimetres. Weight: 2.072 ounces. 58.746 grammes  
Specific gravity: 2.9994; hardness: 6.5. *Nephrite*  
Color: Spinach-green

An angular fragment with one polished face and one rough fractured surface which very finely shows the splintery, horn-like texture of the homogeneous and compact material. On the polished face sev-

eral crystals are present with a metallic, somewhat brownish lustre, probably pyrrhotite. One of these is long and more slender, and may possibly be rutile.

164

## PART OF BROKEN SLAB

NEW ZEALAND

Dimensions:  $2.56 \times 1.47 \times .34$  inches.  $6.5 \times 3.7 \times .9$  centimetres. Weight: 2.015 ounces. 57.112 grammes  
Specific gravity: 2.9931; hardness: 6.5. *Nephrite*  
Color: Spinach-green

Part of a broken slab cut transversely across the pronounced cleavable fracture of the mineral. This is very clearly shown by transmitted light and is very apparent on the broken edge, where occasional

crystals are made visible by the pocket lens. The material is of compact, homogeneous structure, and has a rich oily lustre. Inclusions of a black metallic substance, probably chromic iron, are noticeable.

165

## FRAGMENT

NEW ZEALAND

Dimensions:  $4.22 \times 1.72 \times .97$  inches.  $10.7 \times 4.4 \times 2.4$  centimetres. Weight: 7.735 ounces. 220.282 grammes  
Specific gravity: 3.0181; hardness: 6.5. *Nephrite*  
Color: Dark pear-leaf-green

A rough fragment with one highly polished face. The material is translucent and wonderfully homogeneous, exhibiting on the broken surfaces the horn-like structure characteristic of nephrite. On the

rough surface are many pale yellow-green and almost white flecks, which are due to internal fracturings or inclusions of differently colored nephrite. The rich oily-green polish is very remarkable.



166

## SMALL THIN SLAB

NEW ZEALAND

Dimensions:  $3.09 \times 2.0 \times .12$  inches.  $7.9 \times 5.1 \times .3$  centimetres. Weight: .915 ounce. 25.934 grammes  
Specific gravity: 3.0382; hardness: 6.5. *Nephrite*  
Color: Dark ivy-leaf-green with lighter translucent patches

A small thin slab of very translucent, almost transparent, homogeneous and very compact nephrite, which is seen by transmitted light to be remarkably free from impurities of every kind. The slab has been cut parallel to the bedded structure, which exhibits fracturing to a marked degree. A projecting fractured edge has a thickness of one third to one half of a millimetre. One face has received a very high polish.  
From the collection of Dr. A. B. Meyer of Dresden, who secured it from Dr. L. Eger of Vienna.

167

## SMALL TABLET

NEW ZEALAND

Dimensions:  $1.53 \times 1.02 \times .22$  inches.  $3.9 \times 2.6 \times .6$  centimetres. Weight: .669 ounce. 18.966 grammes  
Specific gravity: 3.022; hardness: 6.5. *Nephrite*  
Color: Very dark green

A small rectangular tablet with one polished face. The material is homogeneous and compact, but only slightly translucent, though the specimen is only six millimetres in thickness. There are a few small lighter-colored markings due to the reflections from the small horn-like structure which is characteristic of this mineral. Black metallic crystals of what appears to be chromic iron are also present.



# ARCHÆOLOGICAL SYNOPSIS

The Archæological part of the Collection has been classified under the following headings:

- a.* Implements.
- b.* Weapons.
- c.* Casts from European Museums.
- d.* Partially Worked Pieces.
- e.* Ornaments and Ceremonial Objects.

## IMPLEMENTS

The implements, 127 in number, are arranged under the names of the countries from which they come, as indicated in the following list:

Switzerland . . . . .	38
France . . . . .	13
Mexico . . . . .	3
Guatemala . . . . .	4
West Indies . . . . .	2
British Columbia . . . . .	12
Alaska . . . . .	39
Siberia (Bering Sea Coast) . . . . .	5
New Zealand . . . . .	5
New Caledonia . . . . .	1
New Guinea . . . . .	2
China . . . . .	3
	<hr/>
	127

The implements from the lake-dwellings of Switzerland and those from France and China date from the neolithic period and are prehistoric in the usual sense of the term. Those from Mexico, Guatemala, and Jamaica might, perhaps, have been better characterized as pre-Columbian—as dating, at any rate, before the Spanish Conquest. The implements and tools from British Columbia, Alaska, Siberia, New Zealand, New Caledonia, and New Guinea are described under the heading of aboriginal, as jade has continued to be used in their manufacture in these countries from an unknown antiquity up to quite modern times. All are prehistoric in the sense of being anterior to any knowledge of history in the several localities to which they belong.

The prehistoric implements from the ruins of the Swiss lake-dwellings are arranged according to their several localities. In their material the three varieties of jade—jadeite, chloromelanite, and nephrite—are all represented. The specimens are described in order

according to the uses for which they were adapted, as hatchets, knives, or chisels. One of the hatchets, No. 168, is accompanied by its original holder of polished deer-horn, and several knives, like No. 189 in the pen-and-ink drawing, are mounted in socketed handles of the same material.

The prehistoric implements from France were obtained from several localities in different parts of the country, where they are generally found in ancient tombs. The celts which are described under the name of hatchets number ten, and there are two knives and one chisel. In the material, as is usually the case in France, jadeite predominates; there is only one of nephrite among the thirteen, while ten are of jadeite, and the two others of its dark-colored variety, chloromelanite.

The prehistoric implements from Mexico, an axe and two chisels, are all made of jadeite; so are the two hatchets, the chisel, and the knife which come from Guatemala. The well-formed and finely finished celt from Jamaica, No. 226, which is a notable representative of West Indian jade, is also wrought out of a compact jadeite of black color delicately flecked with light gray.

The series of aboriginal implements or tools from British Columbia comprises an axe, an adze, four hatchets, two chisels, and four knives. All are fashioned of nephrite of diverse shades of green, from light grayish-green, olive, spinach, and pear-leaf greens veined or mottled with other tints to greenish-black and a peculiar black of porphyritic structure strewn with light greenish-gray translucent spots with a silky sheen. In connection with the British Columbian implements, attention may be directed to an interesting aboriginal grit-stone (No. AA), adapted for cutting grooves in nephrite, which was dug up from a burial-place at Lytton, British Columbia, in 1897, by the Jesup North Pacific Expedition and afterward presented to the Collection; it was held in the hand and worked in the way shown in the illustration.



The display of aboriginal implements from Alaska is both extensive and comprehensive. They are arranged according to the use for which they were intended, and the number in each category is indicated in the accompanying table:

Axes . . . . .	4
Adzes . . . . .	13
Hatchets . . . . .	3
Chisel . . . . .	1
Knives . . . . .	8
Knife-sharpener . . . . .	4
Scrapers . . . . .	3
Pick . . . . .	1
Harpoon-head . . . . .	1
Hand-pestle . . . . .	1
	39

The axes, of which No. 240 is illustrated, are generally large in size, but roughly finished, with the expenditure of as little labor as possible; when in use they are hafted with wood secured by stout thongs of hide. The adzes, ground down to a sharp cutting edge, are usually inserted into bone holders to which bone handles are lashed with thongs of rawhide, in the manner shown in the sketch of No. 244; the adze, No. 247, of Alaskan Eskimo origin, has been illustrated in colors with the roughly shaped handle of walrus-bone in which it is socketed; the Tlinkit people are accustomed, according to Lieutenant Emmons, to set their jade adzes, of which No. 256 is one, in wooden handles. The knives from Alaska show a variety of size and form; one kind, called by the natives *u-lu-ra*, or "woman's knife," because it is used for domestic purposes, such as cutting up fish or shaping skin garments, is illustrated by No. 263, a knife with circular edge set in a handle of walrus-bone in the manner of a butcher's cleaver, and by No. 266, a long, thin-bladed implement with a sharp curved cutting edge, reminding one of the leather-cutter's "half-moon knife." The knife-sharpener of jade, which seems to be peculiar to Alaska, is shaped as a flattened rod, highly polished, tapering to a finger-like point at one end, and perforated at the other for suspension from the belt; they were used as hones to sharpen the edges of their slate knives; No. 271 once hung upon the belt of the wife of the chief of the Selawik tribe of Eskimos, and was greatly prized by her as an heirloom. The three scrapers, or skin-dressers, from Alaska differ from the flint scrapers found elsewhere in having straight edges bevelled on the inner margin like the blade of an adze or a plane; they are mounted in shaped handles of reindeer-horn or walrus-bone, the handles of Nos. 273 (see illustration) and 274, which are comparatively modern, being decorated with incised hunting and fishing scenes. The pick, No. 276, was provided with a handle of bone or wood and used by the natives for digging up roots. The harpoon-head, No. 277, consists of a thin triangular blade of nephrite set in a short-pointed shank of walrus-bone and secured by pegs of bone; a full account of its use is given in the descriptive part of the catalogue, as observed by Lieutenant Emmons, from whom the specimen

was obtained. The hand-pestle, No. 278, shows signs of long use and is interesting from the fact that the pounding end is deeply charged with particles of fine gold, showing that it had been used for grinding natural gold-dust or sand containing gold-dust.

The material of Alaskan objects is always nephrite, generally translucent and oily-green by transmitted light; the adze, No. 246, which is described as a typical specimen, is of spinach-green color clouded and specked with dark brown, while its weathered surface is dark dead-oak-leaf (*feuille morte*).

The aboriginal implements from the Bering Sea coast of Siberia generally resemble those of Alaska both in form and material, the latter being a nephrite, usually dark green in color and frequently mottled with brown. They are five in number: an axe from the Chukchis, the reindeer people of the Asiatic coast opposite Alaska; an adze and a chisel from some other part of Eastern Siberia; a long hatchet and a knife with a hole drilled through it at one end for suspension, which came from an old Russian collection, with no notes, unfortunately, of their exact localities attached.

New Zealand and the other jade-using islands of Australasia are represented by a selection of eight aboriginal axes and hatchets, all of which are wrought of nephrite. The great axe, No. 285, which once belonged to a noted Maori chief of the North Island of New Zealand, of grayish-olive and pear-leaf-green color and very fine fibrous structure, shows a silky lustre by reflected light and has a chatoyancy as beautiful as that of an iridescent chrysoberyl cat's-eye. The adze, No. 286, is set in a cloven wooden holder, and bound round with a two-braided cord of fine vegetable fibre, as shown in the colored illustration. The divided hatchet, No. 288, is interesting as an illustration of the primitive methods of sawing and hammering followed by the prehistoric lapidaries in working out their tools in the mass, and finally breaking them free from the central unsawn body by a smart blow. The axe from New Caledonia, No. 289, is of mottled brown color, and is only partially ground down, so that the natural pitting and much of the weathered surface of the original boulder still remain visible. The two aboriginal celts from New Guinea, Nos. 290, 291, were recently collected with a number of similar specimens by a German naturalist on the "Sattelberg"; they come from the shore of Huon Gulf in German New Guinea, and are reported to be still used by the natives of the district.

Three interesting prehistoric implements from China are placed next, being described as an axe, No. 292, a hatchet, No. 293, and a cleaver, No. 294, of which the last two have been illustrated in colors. All three are of nephrite, and all belong to the perforated class, being drilled through with holes. The Chinese regard these celts, which are often washed out of the ground in different parts of the country, as thunderbolts, and wear them as amulets, either plain or carved for the purpose with appropriate mythological designs. Some such decorated specimens will be found included among the tomb jades, as well as certain small jade celts, like No. 324, which has been illustrated in the same colored plate as the above two, and which appear to be "survivals" rather than to have ever been intended for actual use as tools.

## WEAPONS

The three large weapons of jade from different parts of the world which come under this heading are set apart from the ordinary implements and tools of corresponding countries because they are intended for war and for no other purpose. Some of the axes and other forms of celts might be occasionally employed in battle, either by themselves or inserted in the top of heavy clubs, but their primary use was as tools for building houses and boats and for various domestic occupations.

The three weapons have been illustrated by colored lithography. The first, No. 295, is an aboriginal fighting-pick of compact spinach-green nephrite with a rich unctuous lustre, from British Columbia. It was obtained by Dr. W. J. Powell from the Chimsian Indians of British Columbia, who call it *nascak* or "killer," while the natives of

Alaska, who also use it, call it *katu*. It is used, mounted in a stout wooden handle about two feet long, principally on important ceremonial occasions, such as the erection of a new building or the burial of a chief. On the former occasion the slaves about to be sacrificed are brained with the *nascak* and their bodies laid in the post-holes of the new building; in the latter, the victims are brained and buried with the chief, so that his spirit may appear in the next world accompanied by a suitable number of attendant sprites.

The second weapon, No. 296, is a finely polished war-club from New Zealand of dark ivy-green nephrite streaked in part with light shades of brown. The war-club or *meré* is well known as the most famous weapon of the Maoris, who used to make it in ancient times of white whalebone and of hard wood, as well as of different varie-



ties of *pounamu* or "green stone," a term under which they include some other commoner minerals besides nephrite. The *meré* was always used by them unmounted, attached to the wrist by a leathern thong passed through the hole which is drilled for the purpose in the handle of the club. These clubs figure largely in the war tales and traditions of the natives, who value them very highly and hand them down as heirlooms for many generations, and are said often to hold them with their land as symbols of hereditary title.

The third of the weapons is a large battle-axe, No. 297, from New Caledonia, with a formidable blade wrought out of spinach-green nephrite confusedly veined and mottled with lighter greens and with

different shades of brown. The blade, of rounded rectangular form with a sharp cutting edge all round, is perforated near one side with two holes through which are passed cords which bind it to the cleft jaws of the handle and to the handle itself. The handle is elaborately made and secured to the axe-head, being wound round with folds of native cloth and tightly tied with knotted and looped twine interwoven and braided in the way shown in the illustration, and ornamented at the lower end with a large bunch composed of knobs of bat's hair provided with a loop for the wrist. It is certainly the most weighty and powerful of the aboriginal weapons in the Collection.

### CASTS FROM EUROPEAN MUSEUMS

In the earlier days of the Collection a number of casts were acquired from some of the European museums to fill up gaps in the archaeological series. These gaps have been partly filled since that time by actual jade objects, yet the casts will be found interesting not only in themselves, but also from the light they throw on the history of the subject. They are exact reproductions, in color as well as in form, of the original specimens, and all but the last two have been faithfully illustrated by four lithographic plates. The series of twenty-one casts has been lettered from A to U, to distinguish them from the objects of jade in the general series, which are always numbered. Their character and method of arrangement are indicated in the following table:

#### ORDER OF CASTS

1. Crude Material: A, B
2. Implements and Weapons:
  - a Denmark: C, D
  - b Germany: E, F, G, H, I, J, K, L, M
  - c Austria: N
  - d Spain: O
  - e Mexico: P
  - f New Zealand: Q
  - g New Guinea: R
3. Amulets:
  - Mexican Figure: S
  - The Leyden Plate: T
  - The Humboldt Celt: U

The first two casts (A and B) are intended to illustrate the history of jade in Europe. They represent two rolled pebbles of leek-green nephrite found in Styria, which are now in the Museum Johanneum at Gratz. The first is said to have been discovered in the year 1880 among the rubble in the bed of the River Sann, near St. Peter, Cilli. The second pebble was picked up in 1875 from a heap of gravel at the entrance of Lazareth-gasse in Gratz, and shows clearly, when taken with other finds made in the valley of the Mur, that nephrite must exist *in situ* in the mountains in which the River Mur has its source.

The casts lettered C to R represent a selection of some of the lar-

gest and most important prehistoric implements that have been discovered in Europe. Several of the original specimens were described by Dr. A. B. Meyer in his work "Jadeit und Nephrit Objecte" (Leipzig, 1882), who is of opinion that some of the longest celts, which show no signs of wear along the edges, must have been ceremonial and not intended for actual use. The first two (C, D) are said to have been found in Denmark in the island of Seeland; the rest come from various localities in Germany and Austria, with the exception of O, a perforated chisel-shaped hatchet found in Spain on the side of a mountain near Mérida in Estremadura, although supposed, like P, the finding-place of which is not known, to be of Mexican origin, and Q, R, which are attributed to New Zealand and New Guinea. With regard to material, Q, a long flat hatchet of typical form and coloring from New Zealand, is the only one wrought in nephrite; all the others are made of jadeite or chloromelanite, and the colored illustrations give a good idea of some of the characteristic shade of these two minerals when shaped and polished after the methods of the later neolithic age. The large heavy hatchet, P, nearly fifteen inches long and almost seven pounds in weight, of greenish-gray jadeite with bluish hue and grass-green with brown and blackish veins, which is supposed from its shape to be of Mexican origin, is finely ground and polished over its whole surface, and is altogether a most striking example of the class of ornamental or sacrificial celts. The cast, R, of the small aboriginal celt, in the Dresden Museum, which was brought from Humboldt's Bay on the northeast coast of New Guinea by the Dutch Expedition of 1858, may be usefully compared with the two nephrite aboriginal celts, Nos. 290, 291, in the Collection, which have been recently brought by a German expedition from the shores of the Huon Gulf in the same island.

The cast S represents a human figure fashioned in translucent bluish-green jadeite, now in the Imperial Museum of Natural History at Vienna, which is supposed to be Mexican of pre-Columbian date; it is pierced for suspension by a hole drilled through the head behind the ears.

The last two casts are taken from two well-known ceremonial jadeite celts engraved with hieroglyphic inscriptions of Central American origin. Cast T is that of the "Leyden Plate," now in the Leyden Museum; Cast U, that of the "Humboldt Celt" in the Ethnological Department of the Berlin Museum.

### PARTIALLY WORKED PIECES

There are two specimens classified under this heading which are of special interest from the evidences they afford of the old methods of working jade, as explained in the section devoted to that subject which forms Part IV of Volume I.

The first, No. 298, is an ancient worked fragment from Guatemala, of mottled light-green and gray jadeite, encrusted with mixtures of gray, brown, and green. It was discovered in the year 1895, together with several other specimens, of which some are in the Collection

(Nos. 300, 301), at an altitude of 11,000 feet on Mount Tacana, a volcanic mountain in Guatemala near the Mexican frontier. It is described as a fragment in the form of an irregular, broken-edged, four-sided slab from the centre of which a circular piece had been cut, apparently by a hollow cylindrical drill. The slab itself appears to have originally been part of a weather-worn mass or boulder from which it had been sawn by six distinct cuttings and finally detached by a slight blow, the boulder having been previously drilled. It is



exceedingly interesting as showing (1) that in the pre-Columbian period crude jadeite existed in Guatemala or Mexico and was no doubt a native product; (2) that it was worked on the spot and not imported in the form of ready-made objects; and (3) that the aborigines of these regions knew the use of the cylindrical drill, just as the Chinese have known and used it for many ages.

The next specimen, No. 299, is a large partly worked piece from New Zealand, of spinach-green nephrite with cloudings of olive-green and a few rough weathered surfaces of brown and gray, the material being translucent, homogeneous and compact in structure. A partially worked water-worn block, with much of the weathered surface

left untouched, it was evidently a stock-stone, showing as it does several ground facets and saw-marks, and especially an arrested attempt to remove a long *kuru* or ear-drop which a little further cutting would have separated from the mass. The specimen has been studied by the microscope and submitted to chemical analysis, as it is interesting mineralogically as well as archaeologically. It exhibits the first stages in the manufacture, by an aboriginal Maori, of an ornamental pendant; the scratches found on the surface in many directions show that a fine-grained abrasive was used in the preliminary rubbing-down process.

## ORNAMENTS AND CEREMONIAL OBJECTS

Under this heading are comprised sixteen specimens. Fifteen of these, which come from Mexico and Central America, are all wrought in *jadeite* of varied tint, and date from pre-Columbian times. The sixteenth, No. 315, an aboriginal pendant (*heitiki*) of grotesque design from New Zealand, is carved in *nephrite* of pear-leaf-green color and has been pierced at the top with the drill for suspension from the neck of the Maori wearer.

The two prehistoric pendants, Nos. 300, 301, which were discovered in 1895 on Mount Tacana in Guatemala, near the Mexican frontier, have already been referred to; the second, a fragment on which the Mayan hieroglyph for "sun" has been identified, may be compared with No. 309, a finely sculptured amulet of lettuce-green jadeite backed with grayish-green, carved with the head of a deity enclosed in the gaping jaws of a serpent and drilled all round with holes for strings of jewels. This last piece, which was illustrated in color, is specially interesting from the inscription of nine Mayan glyphs engraved on the back; it is said to have been found in the state of Guerrero, Mexico, but as it appears to be Mayan in motive and design, it probably came originally from Yucatan, or possibly from Chiapas, as the Tzentsals of that province were acquainted with both Mexican and Mayan culture and still use amulets of the kind.

Among other ceremonial objects in the list which are illustrated in the same colored plate will be found: No. 303, a little Mexican mask of typical style carved in light emerald-green and gray jadeite; No. 306, a long tubular bead of rounded square section wrought in greenish-gray jadeite speckled with green of different shades, from the state of Guerrero; and No. 308, a tiny amulet or ornament of

Mexican origin carved in the form of a bird's head with hooked parrot-like beak, of brilliant lettuce-green jadeite mottled with light gray. With regard to these amulets, Nicolas Monardes, who wrote in 1565, tells us of the *pedras de hijadas* that the stones were brought to Spain in "divers forms and fashions, for so the Indians had them in old time, some like to fishes, others like to heads of birds, others like to bills of popinjays, others like to round beads, but all pierced through for so did they use them to wear them hanging."

Some other prehistoric specimens to which attention may be directed are: No. 313, a small idol of sage-green jadeite; No. 307, an example of the curious trumpet-shaped ornaments (*oripendula*) that used to be worn in the ear of the ancient Mexicans, fashioned in dark-green jadeite interspersed with lighter green crystals; and No. 314, a fragment of a pendant from Yucatan of sage-green jadeite, of translucent structure but finely granular at the fracture, showing reflections, apparently cleavages of jadeite crystals, which might be mistaken for mica.

The most curious, perhaps, of the prehistoric relics of Mexican origin are three human teeth, No. 310, inlaid with jadeite of pea-green color. They were found in a grave four feet deep in Tacamaca, near Guadalajara, in the state of Jalisco, together with the skeleton and skull, both much decayed, to which they belonged, and were, no doubt, inlaid during the lifetime of the individual. There are teeth from Yucatan similarly encrusted in the Peabody Museum at Harvard University, and a tooth inlaid with turquoise, labelled "Peru," is exhibited in the Ethnological Museum at Berlin.

## IMPLEMENTS

168 PREHISTORIC

HATCHET

SWITZERLAND

Dimensions:  $2.25 \times 1.38 \times 1.16$  inches.  $5.7 \times 3.5 \times 1.7$  centimetres. Weight: 2.357 ounces. 66.838 grammes  
Specific gravity: 3.4381; hardness: 7.0. *Jadeite*  
Color: Grayish-green with mottlings and spots of brown

A small irregularly shaped hatchet set in a short deer-horn handle, found among the remains of the pile-dwellings of Switzerland. The cutting edge, formed by grinding from both faces and still very sharp, appears to have been ground away more at one side than at the other. The whole piece seems to have been smoothed over by grinding and then roughened at the sides by hammering for the better retention of the implement in its socket.

The material is translucent, and has a fine crystalline structure,

with some transverse cracks and inclusions of other minerals or of differently colored particles of the same mineral.

The discovery, about the middle of the nineteenth century, of the ruins of many pile-dwellings in several of the Swiss lakes gave a great impetus to archaeological explorations and study. As early as 1829 piles and other remains had been observed at Ober Meilen on Lake Zürich while the harbor there was being deepened, but nothing of archaeological interest came of this discovery. In the



winter of 1853-54, however, an extraordinary drought and long-continued cold caused the rivers to shrink, and the level of the lakes became lower than was ever before known or recorded in the history of the place, and in the course of building operations on the reclaimed land more pile remains, as well as implements of various kinds, were found. Again in 1858 advantage was taken of low water in the lake to make fresh investigations, resulting in the discovery of many prehistoric implements of stone, bone, and horn, and "amongst them a rather large number of stone celts, several of which were of clear nephrite."

Other discoveries were made at Moosseedorf near Bern; at Robenhausen and Irgenhausen on the Lake of Pfäffikon; at Wangen and other places on the Unter See; in Lake Constance and the Ueberlinger See; the Lakes of Bienne, Zug, Neuchâtel, and many others, which as represented on the map form a bow extending from Lake Bourget in Savoy, on the west, to Starnberg near Munich in Germany, and Munden on the Ebensee in Austria, on the east. Hundreds of pile-dwelling settlements were explored, many of them several acres in extent, revealing prehistoric objects of all kinds, including bone, horn, stone, copper, bronze, and even iron. Most of these appear to belong to the neolithic or later period of the stone age. This is apparent from the fact (1) that few flint implements were found; (2) that the other stone implements were all polished; and (3) that among them were many of jade, the most difficult of all the minerals to work.



It is also evident from a survey of the finds that the inhabitants of these pile-dwellings had emerged from the primitive savagery of the palæolithic or earlier period of the stone age, and had begun to progress in civilization and culture. Many rudely decorated earthenware vessels were found, as were spindle-whorls and the remains of textile fabrics. The presence of various cereals showed that agriculture was practised, and among the animal remains the domesticated predominated over the wild. Copper had become known, and in some places occasional copper and bronze implements were found. We are still unable, however, to determine the exact date. Keller thinks that many of them lasted until the time of Cæsar. We are concerned more particularly with the jade implements, and it is worthy of note that nephrite implements are most commonly found in the lakes of East Switzerland, while jadeite prevails in the west, a fact which presents a curious commentary on the ethnographic theories which have been mooted in regard to the original home of jade and its distribution over the world. Professor Edmund de Fellenberg, who directs attention to this fact in Keller's "Lake-Dwellings" (Volume I, p. 204), asks, "Have the immigrations taken place from different sides, or had these races barter transactions in different directions?" No definite categorical answer can

be given to either of these queries, but the weight of evidence, imperfect as that evidence is, still points to the existence of local supplies, all knowledge of which is now lost.

## 169 PREHISTORIC

## HATCHET

## SWITZERLAND

Dimensions:  $2.47 \times 1.53 \times .78$  inches.  $6.3 \times 3.9 \times 2.0$  centimetres. Weight: 3.296 ounces. 93.446 grammes  
Specific gravity: 3.4321; hardness: 7.0. *Chloromelanite*  
Color: Very dark green

A short stout hatchet with sharp crescent-shaped cutting edge ground evenly from both faces and smoothed on the lower half of the piece. The sides and upper end are entirely rough, part of this being the original surface, the remainder being roughened to secure it to the handle or holder.

The material is homogeneous and compact, but translucent on the cutting edge only. The color is a very dark green with small pale-green spots and some veinings.

This is one of the objects found among the remains of ancient pile-dwellings situated in a peat-bog near Robenhausen on the southern side of Lake Pfäffikon. The lake-dwellers' village of Robenhausen was discovered in 1858 by Dr. Jacob Messikomer, whose excavations brought to light many interesting things belonging apparently to successive settlements, as shown by a vertical section of the locality. Relics of a first settlement were found twelve feet underground, covered with a layer a foot in thickness showing remains of a con-

flagration, with stone and bone implements, etc. Above this layer was another of peat three feet thick with relics of a second settlement. Then a foot layer with remains of a conflagration; then three feet of peat, broken stones, etc., with the flooring and relics of a third settlement. This was overlain by another layer a foot thick containing pottery, and celts of nephrite and other stones, then two feet of peat, and above all half a foot of mould.

The space covered with piles was nearly three acres in extent, forming an irregular quadrangle about 2000 paces from the shore. Dr. Messikomer states that about 100,000 piles of beech, oak, and pine wood, sharpened at the end with stone celts, must have been used. These were about eleven feet long, placed two to three feet apart, and driven into the lake-bottom to the depth of a few feet. Cross-timbers and boards placed on these formed the floor on which rested the huts which served the prehistoric dwellers as residences. (See Keller's "Lake-Dwellings," London, 1878, Volume I, p. 43.)

## 170 PREHISTORIC

## HATCHET

## SWITZERLAND

Dimensions:  $1.88 \times 1.22 \times .44$  inches.  $4.8 \times 3.1 \times 1.1$  centimetres. Weight: 1.645 ounces. 30.179 grammes  
Specific gravity: 3.4106; hardness: 7.0. *Chloromelanite*  
Color: Very dark green, almost black

A small hatchet with a broad cutting edge from which the sides slope symmetrically upward to a thin, narrow head. It has been ground smooth on both faces, but left somewhat rough at the sides, doubtless to aid in securing it in a handle or holder.

The material is opaque with small white and grayish markings one half millimetre to three millimetres in diameter, due to the mineral itself or to the inclusion of some other mineral.

Presented to the Collection by Professor A. A. Damour of Paris.



## 171 PREHISTORIC

## KNIFE (IN HOLDER)

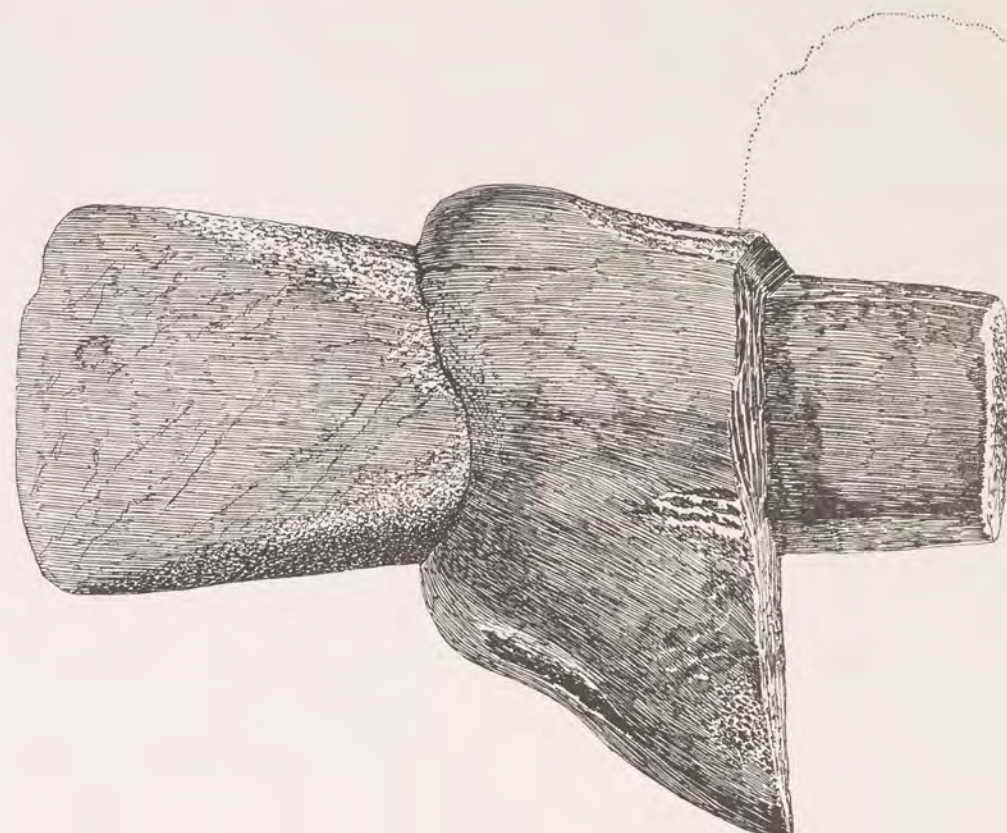
SWITZERLAND

Dimensions: .44 × .16 inch. 1.1 × .4 centimetres.  
 Weight: .106 ounce. 4.470 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Olive-green

A very tiny cutting-implement set in a perforated and slightly ornamented deer-horn handle. It has been very nicely ground into shape and smoothed, and has evidently been very little used, or used with great care, as the edge shows no wearing or breaking.

The material is translucent and very compact, with the characteristic splintery fracture of nephrite.

The object is said to have come from the Swiss lake-dwellings, but from what particular locality there is no evidence to show.



## 172 PREHISTORIC

## HATCHET (WITH HOLDER)

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 3.03 × 1.88 × .91 inches. 7.7 × 4.8 × 2.3 centimetres.  
 Weight: 6.132 ounces. 173.850 grammes  
 Specific gravity: 3.0919; hardness: 6.5. *Jadeite-nephrite-zoisite mixture*  
 Color: Very dark green with patches and veinings of black and gray-green

A thick flat hatchet with an almost straight cutting edge and a narrow head, found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The object was probably smoothed all over by grinding, and then roughened by pecking or hammering on the sides and around the top, the more readily to secure it in its holder of polished deer-horn, the upper part of which has been shaped to fit into a handle.

The material, which has been pronounced by Penfield to be a mixture of glaucophane, epidote, and quartz, is opaque and exhibits a twisted, horny structure.

When studied microscopically in thin sections it is found to consist mainly of amphibole in minute irregularly shaped crystals, and some larger ones that exhibit distinct green color with pleochroism from yellowish- to bluish-green. In places the green amphibole occurs in distinct prismatic crystals, with the prism faces and cleavage well developed. Between these minute crystals is a colorless mineral, with lower refraction and low double refraction, of very pure substance, suggesting quartz, but its double refraction is somewhat lower. It is wholly allotriomorphic and interstitial, acting as a cement for the other minerals, though in very small areas it is very widely scattered through the rock and is present in considerable amount. Scattered through the rock are small crystals of an almost colorless mineral whose form and optical properties correspond to those of clinozoisite. With it is associated a small amount of epidote. The colorless mineral appears to consist of relatively large individuals, not an aggregate of small ones. There are small irregularly shaped grains of a highly refracting yellowish mineral, possibly titanite, with attached grains of magnetite. Iddings says that it is not a transition between jadeite and nephrite, although it was probably derived from jadeite. It probably contains zoisite, whose specific gravity is 3.25 to 3.37. This would raise that of the nephrite somewhat.

The chemical constitution of the specimen was very carefully studied by Penfield, and his remarks on the subject, together with Walden's analysis, are given in full:

"This is the only example in the Collection of a mixture of glaucophane and zoisite. Under the microscope epidote of pale color and low double refraction corresponding to clinozoisite, a little quartz, and abundant material having the cleavage and optical properties of a mineral belonging to the amphibole group were observed. The presence of nearly six per centum of soda in the specimen indicates that the amphibole mineral must be related to glaucophane and riebeckite, which are believed to contain respectively the molecules  $\text{NaAl}(\text{SiO}_3)_2$  and  $\text{NaFe}(\text{SiO}_3)_2$ , similar to the soda-alumina and soda-iron silicates of jadeite and aegirite. The amounts of alumina, ferric oxide, and alkalis furnish a basis for calculating the chemical composition as follows:

		Glaucophane			Epidote $\text{HCa}_2\text{Al}_2\text{Si}_2\text{O}_{13}$	Quartz $\text{SiO}_2$
		$\text{NaAl}(\text{SiO}_3)_2$	$\text{NaFe}(\text{SiO}_3)_2$	$(\text{MgCa})\text{SiO}_3$		
Silica . . . . .	51.33	11.76	12.00	7.92	15.48	4.17
Alumina . . . . .	18.31	5.00			13.31	
Ferric oxide . . . . .	8.08		8.08			
Magnesia . . . . .	4.05			4.05		
Lime . . . . .	11.34			1.71	9.63	
Soda . . . . .	5.76	2.66	3.10			
Potash . . . . .	.55	.55				
Water . . . . .	.76				.76	
	100.18	19.97	23.18	13.68	39.18	4.17







No. 182  
**HATCHET**  
Nephrite  
Lake Neuchâtel

No. 177  
**HATCHET**  
Jadeite  
Lake Neuchâtel

No. 178  
**HATCHET**  
Jadeite  
Lake Neuchâtel

No. 191  
**KNIFE**  
Nephrite  
Lake Neuchâtel

No. 172  
**HATCHET IN HOLDER**  
Jadeite-Nephrite  
Lake Neuchâtel

No. 188  
**CHISEL**  
Jadeite  
Lake Neuchâtel

No. 205  
**KNIFE**  
Nephrite  
Lake Constance

No. 195  
**KNIFE**  
Nephrite  
Lake Neuchâtel

No. 176  
**HATCHET**  
Jadeite  
Lake Neuchâtel

PRÉHISTORIC IMPLEMENTS FROM LAKE-DWELLINGS OF SWITZERLAND











"The glaucophane molecules combined constitute 56.83 per centum of the total material, and are given below after calculation to 100 per centum. There are also given for comparison two analyses of glaucophane from Lyra, one from the Cyclades—I by Schnedermann, II by Luedecke (Analyses 1 and 2, p. 399, Dana's 'System of Mineralogy').

	Calculation	Glaucophane from Lyra	
		I	II
Silica . . . . .	55.74	56.49	55.64
Alumina . . . . .	8.80	12.23	15.11
Ferrie oxide . . . . .	14.22		3.08
Ferrous oxide . . . . .		10.91	6.85
Manganous oxide . . . . .		.50	.56
Magnesia . . . . .	7.13	7.80	7.80
Lime . . . . .	3.01	2.40	2.40
Soda . . . . .	10.13	9.34	9.34
Potash . . . . .	.97		
	100.00	99.67	100.78

"In most respects No. 172 compares favorably with the glaucophane analyses given for comparison, the discrepancies being in the alumina and oxides of iron. It must be borne in mind, however, that in the calculation all of the iron oxide has been credited to the glaucophane, while undoubtedly part of it belongs to the epidote. It is safe, therefore, to assume that the glaucophane contains somewhat more alumina and less ferrie oxide than indicated by the foregoing calculation, but the amount could not be determined without analysis of either the epidote or the glaucophane."

## 173 PREHISTORIC

## HATCHET

## LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.22 \times 1.31 \times .66$  inches.  $5.6 \times 3.3 \times 1.7$  centimetres. Weight: 2.328 ounces. 65.001 grammes  
Specific gravity: 3.2827; hardness: 7.0. *Jadeite*  
Color: A mottling of light gray and green with stainings of very light brown

A small hatchet found among the remains of the ancient pile-dwellings near Yverdon, Lake Neuchâtel, Switzerland. It has an almost crescent-shaped cutting edge produced by grinding from both faces, which are smooth. The sides are roughened by a secondary process, the better to fit it for being held firmly in its socket or handle.

The material is translucent, homogeneous and compact, the crystalline structure of the jadeite being quite apparent at the upper end where a piece has been broken off.

Explorations among the pile-dwellings of Lake Neuchâtel were begun in 1854 in the Yverdon district at the southern extremity of the lake. Since then about fifty settlements near the shores

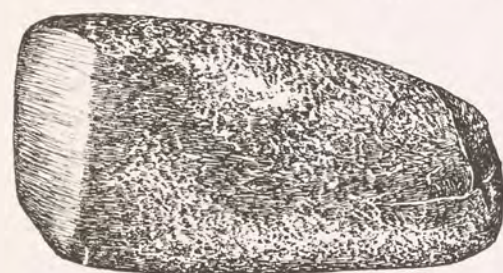
of that lake have been explored with varying results, showing that these different stations ranged from the pure stone age, as at St. Aubin on the west coast, to the bronze at Cortaillod a little farther north, to both stone and bronze at Auvernier and Estavayer, to stone, bronze, and iron at Marin in the north. At Concise, Corcellettes, and Les Uttins, which are grouped under Yverdon, stone predominated, though bronze objects were also found. It follows from this that the pile-dwellings of Lake Neuchâtel may have passed through all the stages of progress denoted by these diverse finds. It is noteworthy that in some localities where both stone and metal settlements existed the metal-using settlements were farther out in the lake than those using stone chiefly.

## 174 PREHISTORIC

## HATCHET

## LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.75 \times 1.34 \times .75$  inches.  $7.0 \times 3.4 \times 1.9$  centimetres. Weight: 3.443 ounces. 97.609 grammes  
Specific gravity: 3.1078; hardness: 7.0. *Jadeite*  
Color: Dark green delicately mottled and veined



A hatchet found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. It is somewhat narrow and thick, has a sharp, slightly crescent-shaped cutting edge and a narrow head. It has been smoothed all over by grinding and then roughened at the sides by pecking so that it could be more securely fastened in its socket or handle.

The material is opaque, has a finely crystalline structure with many small transverse cracks or seams, and some inclusions of a reddish-brown mineral, probably garnet.

## 175 PREHISTORIC

## HATCHET

## LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.94 \times 1.19 \times .41$  inches.  $4.9 \times 3.0 \times 1.0$  centimetres. Weight: 1.127 ounces. 31.967 grammes  
Specific gravity: 3.2168; hardness: 7.0. *Jadeite*  
Color: Light green with minute black specks

A small flat hatchet with straight cutting edge and narrow top smoothed all over by grinding, and later hammer-roughened at the sides the better to secure it in its handle or holder. It is one of those found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland.

The material is subtranslucent on the cutting edge of the piece, but is otherwise opaque, and of a finely crystalline structure. The upper broken or unfinished end shows the structure and fracture very well.





176 PREHISTORIC

HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 2.72 × 1.5 × .62 inches. 6.9 × 3.8 × 1.6 centimetres. Weight: 2.814 ounces. 79.798 grammes  
Specific gravity: 3.2649; hardness: 7.0. *Jadeite*  
Color: Very dark green, almost black

A hatchet with a sharp, somewhat crescent-shaped cutting edge ground evenly from both faces. The implement was originally smoothed all over by grinding, and later hammer-roughened on the sides to secure it to a handle. This hammering is deeper near the centre and encroaches somewhat on the flat faces. The upper end still exhibits part of the original boulder surface.

The material is of a compact, crystalline texture. It has all the appearance of being chloromelanite, but the low specific gravity

would place it among the jadeites proper. The presence, however, of a transverse section of a perfect feldspar crystal measuring three millimetres by two and one half millimetres suggests that there may be more, and these, if present, would most certainly lower the specific gravity, as was found to be the case in the jadeite mask from Mexico (No. 303).

This specimen is one of the prehistoric implements found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland.

177 PREHISTORIC

HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 3.12 × 1.66 × .62 inches. 7.9 × 4.2 × 1.6 centimetres. Weight: 3.666 ounces. 103.930 grammes  
Specific gravity: 3.3745; hardness: 7.0. *Jadeite*  
Color: Very dark green, almost black

A hatchet with slightly curved faces, and flat sides sloping symmetrically upward and inward from a sharp crescent-shaped cutting edge to a narrow blunt head; found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The piece has been ground smooth all over except where the grinding did not reach the original pittings of the block or boulder from which it was cut.

The material is opaque, compact in texture, and by transmitted light shows a beautiful green. At the upper end the color is almost a grayish-green, due to weathering.

Microscopically the piece is composed of very small irregularly shaped crystals or grains of colorless jadeite and also pale-green amphibole. These have a crudely parallel orientation, producing a lamination or fibrillation of the mass, which is further emphasized by streaks of minute grains of an almost colorless mineral with high index of refraction and high double refraction. Some crystals of it are well developed and sharply defined, and appear in quadratic or tetragonal pyramids, with very short prisms in some cases. These characteristics are those of zircon, but its determination is questionable. There is also a little iron oxide, probably magnetite, in irregularly shaped grains associated with the (?) zircon. The green color of the amphibole is quite pronounced in some crystals, and in one instance is a strong blue-green.

A chemical analysis by Foote, calculated by Clarke, gave the following results:

	Jadeite	Fe <sup>+++</sup> CaSiO <sub>6</sub>	Magnetite	Nephrite	Unaccounted for
Silica . . . .	56.08	44.95	1.04	8.91	1.18
Alumina . . .	19.05	19.05			
Ferrie oxide .	3.76		2.82	.94	
Ferrous oxide .	2.26		.42	1.84	
Magnesia . . .	2.08			2.08	
Lime . . . . .	4.94		.96	3.98	
Soda . . . . .	11.61	11.61			
Potash . . . .	.26				.26
Water . . . . .	.18				.18
	100.22	75.61	4.82	13.36	1.62

Abstract	
Jadeite . . . . .	75.61
Fe <sup>+++</sup> CaSiO <sub>6</sub> . . .	4.82
Magnetite? . . . .	1.36?
Nephrite . . . . .	16.81
Unaccounted for . .	1.62
	100.22

178 PREHISTORIC

HATCHET

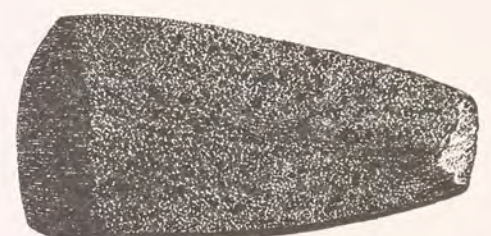
LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 2.44 × 1.19 × .44 inches. 6.2 × 3.0 × 1.1 centimetres. Weight: 1.609 ounces. 45.643 grammes  
Specific gravity: 3.4392; hardness: 7.0. *Chloromelanite*  
Color: Black

A small flat hatchet found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The head is only about half the width of the cutting edge, which has been produced by grinding from both faces. The object has been smoothed all over by grinding and the sides then roughened by pecking or hammering so that it could be readily secured in its handle or holder. It was probably fashioned from a boulder.

The material is opaque, homogeneous and compact, and shows a fine-grained crystallization at the broken upper end of the object.

Chloromelanite is simply a variety of jadeite rich in iron, to which it owes its very dark color. Its hardness is the same, but the specific gravity is somewhat higher.













No. 196  
**KNIFE IN HANDLE**  
Jadeite  
Lake Bienne

No. 181  
**HATCHET**  
Nephrite  
Lake Neuchâtel

No. 183  
**HATCHET**  
Nephrite  
Lake Neuchâtel

No. 192  
**KNIFE**  
Nephrite  
Lake Neuchâtel

No. 197  
**KNIFE IN HANDLE**  
Nephrite  
Lake Bienne

No. 186  
**CHISEL**  
Nephrite  
Lake Neuchâtel

No. 198  
**HATCHET**  
Nephrite  
Lake Constance

No. 194  
**KNIFE**  
Jadeite  
Lake Neuchâtel

No. 180  
**HATCHET**  
Nephrite  
Lake Neuchâtel

PREHISTORIC IMPLEMENTS FROM LAKE-DWELLINGS OF SWITZERLAND







179

## HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $3.56 \times 1.84 \times .78$  inches.  $9.1 \times 4.7 \times 2.0$  centimetres. Weight: 6.905 ounces. 195.771 grammes  
 Specific gravity: 3.0022; hardness: 6.5. *Nephrite*  
 Color: Mottled grayish-green on the faces, almost black on the sides

A wedge-shaped hatchet, broken at the upper end, found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The piece is about one sixteenth of an inch thicker at one side than at the other, owing to an interrupted attempt at reducing the convexity of one face. The cut surface, which extends about half-way across the hatchet, consists of remarkably regular groovings that have never been ground off, their regularity showing the constancy and uniform-

ity with which the work was carried on. At the broken upper end there is a series of cavities filled with a soft foliated talc-like substance with some arrangement in grouping. This was either the edge of an altered outer part of a fractured mass or it was the presence of this softer surface which occasioned the break at this point.

The material is opaque in mass and is very compact, and interwoven in delicate fibres. Two faces exhibit a sheen.

180

## HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.88 \times 1.62 \times .56$  inches.  $7.3 \times 4.1 \times 1.4$  centimetres. Weight: 2.207 ounces. 62.560 grammes  
 Specific gravity: 3.0034; hardness: 6.5. *Nephrite*  
 Color: Olive-green with a pearly sheen on part

A hatchet found among the piles of the ancient lake-dwellings of Lake Neuchâtel, Switzerland. The upper end of the piece, which is thin and slaty in appearance, has been left unworked, and the thin sides have all the natural roughness of a fractured piece. The cutting edge was produced by grinding from both faces, and so homogeneous is the material that the ground surface is almost a polish. Dr. A. B. Meyer of Dresden, from whose collection this specimen came, remarks that it is a very rare variety of jade, and the only example of the kind that has come to his notice. It has a compact interwoven laminated structure made up of so many fine laminae that a beautiful sheen is visible transversely across the reft surface. Under the microscope the rock appears to have been crushed or dragged, and the structure indicates a high degree of dynamic metamorphism. The fibres are almost perfectly parallel with striations that seem to be due to twinning parallel to the orthopinacoid. The structure resembles that of silicified wood in longitudinal section.

The analysis by Walden, calculated by Clarke, is as follows:

	AlNaSi <sub>2</sub> O <sub>6</sub>	FeNaSi <sub>2</sub> O <sub>6</sub>	Nephrite	
Silica . . . . .	55.48	1.91	1.35	52.22
Alumina . . . . .	.89	.89		
Ferrie oxide . . . . .	.90	.90		
Ferrous oxide . . . . .	3.47			3.47
Magnesia . . . . .	22.69			22.69
Lime . . . . .	12.89			12.89
Soda . . . . .	.80	.49	.31	
Potash . . . . .	.44		.06	.38
Water . . . . .	3.12		.44	
	100.68	3.29	2.62	92.09

Abstract	
Nephrite . . . .	92.09
AlNaSi <sub>2</sub> O <sub>6</sub> . . .	3.29
FeNaSi <sub>2</sub> O <sub>6</sub> . . .	2.62
Excess water . .	2.68
	100.68

181

## HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.06 \times 1.44 \times .41$  inches.  $5.2 \times 3.6 \times 1.0$  centimetres. Weight: 1.156 ounces. 32.790 grammes  
 Specific gravity: 2.9841; hardness: 6.5. *Nephrite*  
 Color: Grayish-green touched here and there with delicately faint brown

A small hatchet of good outline and smoothed all over, found among the piles of the ancient lake-dwellings of Lake Neuchâtel, Switzerland. The cutting edge is slightly curved and is much wider than the butt or head, which has been broken, and shows that it was made from a rolled pebble, or that it was the exterior of a nephrite mass.

The material is subtranslucent and of a compact fibrous laminated structure with transverse veinings. It has evidently been subjected to heat, and it is therefore impossible to state what the original color of the material was.

182

## HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $3.38 \times 1.66 \times .62$  inches.  $8.6 \times 4.2 \times 1.6$  centimetres. Weight: 3.747 ounces. 106.236 grammes  
 Specific gravity: 3.0118; hardness: 6.5. *Nephrite*  
 Color: Olive-green with patches of light gray

A hatchet of the usual form, narrow at the top and wide at the cutting edge; found among the remains of the ancient pile-dwellings of Lake Neuchâtel. Two very pronounced cutting-marks are visible on one face.

The material is subtranslucent and very compact. Where cut it exhibits a splintery structure parallel with the flat faces of the implement. Reflections from internal fractures are very conspicuous on both faces.



Under the microscope the fibres seem to be parallel, sometimes in slightly curved arrangement with a laminated structure strongly marked and accompanied by crooked cracks. The rock appears to have been crushed or dragged, and the structure indicates a high degree of dynamic metamorphism.

The analysis by Walden, calculated by Penfield, is as follows:

		Glauco-phane and Riebeckite	Nephrite R <sub>2</sub> SiO <sub>5</sub>	Unaccounted for	Nephrite Recalculated	Theory
Silica . . . . .	57.19	7.44	49.75		57.35	57.69
Alumina . . . . .	2.24	2.24				
Ferric oxide . . . . .	1.60	1.60				
Ferrous oxide . . . . .	1.10		1.10			
Magnesia . . . . .	21.97		21.97		28.32	28.85
Lime . . . . .	13.16	.73	12.43		14.33	13.46
Soda . . . . .	.20	.20				
Potash . . . . .	1.44	1.44				
Water . . . . .	1.82		.90	.92		
	100.72	13.65	86.15	.92	100.00	100.00

The prevailing alkali is here potash, and it has been necessary to take some calcium to make up for the deficiency of the combined alkalis.

183

PREHISTORIC

HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 2.72 × 1.94 × .59 inches. 6.9 × 4.9 × 1.5 centimetres. Weight: 4.055 ounces. 114.950 grammes  
Specific gravity: 2.9836; hardness: 6.5. *Nephrite*  
Color: Light green with a beautiful sheen and markings of dark brown

A hatchet found among the remains of the pile-dwellings of Lake Neuchâtel, Switzerland. The flat faces are entirely smooth and free from stain, but the two sides, which did not receive much grinding and are almost entirely as they were when the material for this piece was broken out of the mass, are stained to some depth, probably due to oil, or fat, or fire, or perhaps to the mud in which the object had been buried for so many centuries.

The material is subtranslucent and very compact on the cutting edge. The beautiful sheen shown on the flat faces of the implement is evidently due to the many minute thin laminae of which it is made up.

Microscopic examinations of thin sections show that the fibres are parallel, slightly curved, the parallel or laminated structure being strongly marked and accompanied by crooked cracks. This rock presents the appearance of having been crushed or dragged, the structure indicating a high degree of dynamic metamorphism.

The analysis by Walden, with reduction by Clarke, is as follows:

		NaFeSi <sub>2</sub> O <sub>6</sub>	R <sup>'''</sup> <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub>	Nephrite	
Silica . . . . .	58.66	1.86	1.46	51.25	
Alumina . . . . .	.50		.50		
Ferric oxide . . . . .	1.76	1.24	.52		
Ferrous oxide . . . . .	3.48			3.48	
Manganous oxide . . . . .	.02			.02	
Magnesia . . . . .	22.43			22.43	
Lime . . . . .	13.34			13.34	
Soda . . . . .	.48	.48			
Potash . . . . .	.10				
Water . . . . .	.12			.12	
	100.89	3.58	2.48	90.64	

Abstract	
Nephrite . . . .	90.64
NaFeSi <sub>2</sub> O <sub>6</sub> . . .	3.58
R <sup>'''</sup> <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub> . . .	2.48
Excess silica . .	4.09
Excess potash . .	.10
	100.89

This nephrite carries an excess of silica over bases.

184

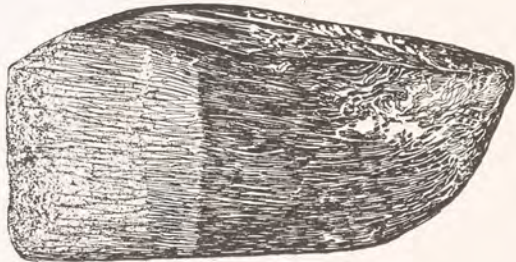
PREHISTORIC

BROKEN HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions: 2.62 × 1.31 × .72 inches. 6.7 × 3.3 × 1.8 centimetres. Weight: 2.596 ounces. 73.624 grammes  
Specific gravity: 2.9738; hardness: 6.5. *Nephrite*  
Color: Dark brown running into lighter shades; partially calcined

A small thick broken hatchet found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The saw-marks on both sides and a narrow fractured surface on one show that it was cut at both sides from a larger mass, and then worked into shape by grinding. The flat sides and the schistose structure of the compact fibrous material are parallel. When the specimen is wet, the color is a dull brown; when dry, it presents an ashy hue, which suggests that the entire piece had been more or less acted upon by fire.





## 185 PREHISTORIC

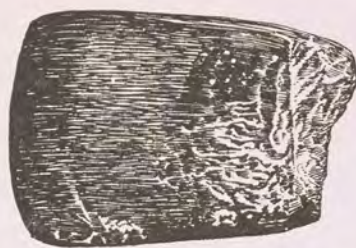
## BROKEN HATCHET

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.84 \times 1.25 \times .44$  inches.  $4.7 \times 3.2 \times 1.1$  centimetres. Weight: 1.323 ounces. 37.527 grammes  
 Specific gravity: 3.4456; hardness: 7.0. *Chloromelanite*  
 Color: Black

Part of a small thin flat hatchet with a sharp regular cutting edge produced by grinding, and smoothed on both faces, the sides showing a roughening or pecking to assist in securing the object firmly in its socket.

The material is opaque, almost black, showing dull dark-green reflections at a fractured surface at the



upper end. It is homogeneous and compact and finely granular in structure. The upper end of the piece shows that it was originally made from a boulder or block with a weathered surface. Grains of a harder or tougher mineral seem to protrude on the ground faces.

## 186 PREHISTORIC

## CHISEL

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.81 \times .62 \times .62$  inches.  $7.1 \times 1.6 \times 1.6$  centimetres. Weight: 1.320 ounces. 37.423 grammes  
 Specific gravity: 2.9987; hardness: 6.5. *Nephrite*  
 Color: Brown of various shades

A small narrow thick chisel, ground to a cutting edge from two faces parallel to the schistose structure of the material, one of these faces showing eight ground surfaces, and the other seven; that is, the position of the chisel was changed fifteen times during the process. The sides of the piece remain almost in their original crude condition and exhibit a brown pearly sheen by reflected light.

The material is opaque and compact, with a laminated cleavable structure running transversely across the cutting edge of the tool.

This is one of the prehistoric pieces found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland.

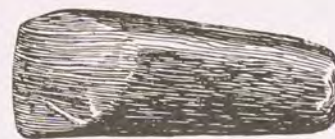
## 187 PREHISTORIC

## CHISEL

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.78 \times .66 \times .5$  inches.  $4.5 \times 1.7 \times 1.3$  centimetres. Weight: .6494 ounce. 18.4125 grammes  
 Specific gravity: 2.9731; hardness: 6.5. *Nephrite*  
 Color: Rich reddish-brown

A small thick chisel found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The material is almost opaque, except on the cutting edge, which is slightly translucent by transmitted light, is compact, fibrous, and interwoven, with the cutting edge cut transversely across the cleavage or laminae of the stone. The piece was evidently fashioned from a boulder that had been considerably weathered. Its slight polish may be due to wear and staining.



## 188 PREHISTORIC

## CHISEL

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $3.78 \times .75 \times .72$  inches.  $9.6 \times 1.9 \times 1.8$  centimetres. Weight: 2.816 ounces. 79.841 grammes  
 Specific gravity: 3.3832; hardness: 7.0. *Jadeite*  
 Color: Dark olive-green

A long thick chisel with rounded body, and a sharp cutting edge formed by equal grinding from two opposite sides. The lower half has been ground smooth, the upper roughened by repeated light blows from a stone hammer which produced many bulbs of concussion, some of which are still visible near the cutting end through the smooth surface. This suggests that the whole mass was originally hammered into its present form before smoothing.

The material is opaque and compact and of finely crystalline structure. Under the microscope it is seen to be a fine-grained aggregate

of colorless to pale-green jadeite crystals, with a curving parallel arrangement of the more or less prismatic crystals. There are abundant colorless garnets about 0.15 to 0.30 millimetre in diameter without distinct crystal outline. There is a subordinate amount of colorless mica-like mineral with the optical properties of pennine or clinochlore. There are also numerous grains of a yellow mineral with high refraction, which is probably sphene.

This is one of the specimens found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland.

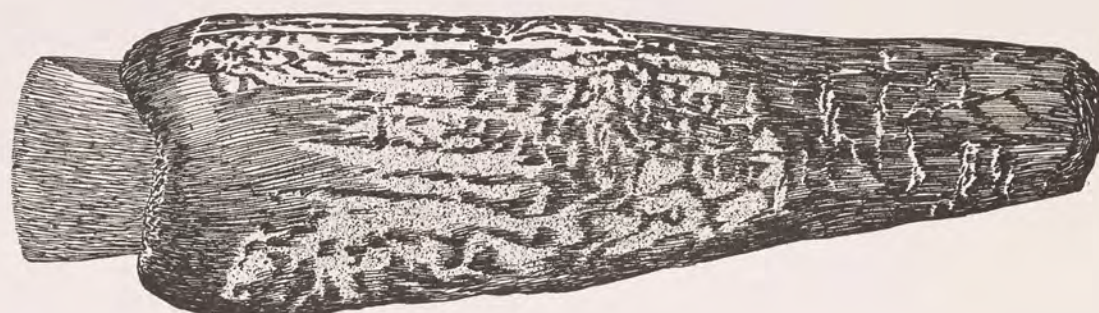


## 189 PREHISTORIC

## KNIFE (WITH HORN HANDLE)

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.09 \times 1.09 \times .59$  inches.  $5.3 \times 2.75 \times 1.5$  centimetres. Weight: 1.245 ounces. 35.314 grammes  
 Specific gravity: 3.0066; hardness: 6.5. *Nephrite*  
 Color: Sage-green



A knife found in the pile-dwelling remains of Lake Neuchâtel, Switzerland. It is short and thick, has a narrow head to fit into its deer-horn handle, and a wide cutting edge which is so sharp that paper can be readily cut with only a slight pressure. The upper end of the

handle has been ground down, showing that this was in turn set in another handle.

The material is translucent and shows by transmitted light a darker interwoven structure.

## 190 PREHISTORIC

## SMALL KNIFE

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.06 \times .62 \times .16$  inches.  $2.7 \times 1.6 \times .4$  centimetres. Weight: .1229 ounce. 3.4850 grammes  
 Specific gravity: 3.0261; hardness: 6.5. *Nephrite*  
 Color: Light grayish-green

A tiny knife found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. It has been smoothed all over by grinding, but still shows traces at one side of having been detached from a larger piece by sawing and a blow. The splintery structure of the material is readily seen at the upper end where it is slightly broken. The laminated splintery texture shows a peculiar green sheen by reflection.



## 191 PREHISTORIC

## KNIFE

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $2.5 \times 1.0 \times .62$  inches.  $6.3 \times 2.5 \times 1.6$  centimetres. Weight: 1.578 ounces. 44.737 grammes  
 Specific gravity: 2.9895; hardness: 6.5. *Nephrite*  
 Color: Dark spinach-green mingled with very light green

A knife with a narrow head and much wider cutting edge greatly worn or ground away at one side; found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland.

The material is opaque and very compact and shows a splintery

structure. The faces of the piece being parallel with the schistose bedding of the stone, it is apparent that the mass had been broken, fractured, or ground parallel to the schistose structure.

## 192 PREHISTORIC

## KNIFE

LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.94 \times 1.19 \times .59$  inches.  $4.9 \times 3.0 \times 1.5$  centimetres. Weight: 1.236 ounces. 35.056 grammes  
 Specific gravity: 2.9344; hardness: 6.5. *Nephrite*  
 Color: Green with heavy markings and incrustations of light gray to dark brown

A small knife found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. It was evidently made out of a small water-worn pebble, and seems to have required very little manipulation to change it from its original shape to its present form. It is thinner toward the top than near the ground edge, and seems to

have been smoothed by grinding everywhere except where it is seamed with a friable altered or non-polishable material.

The material is subtranslucent, very tough and compact, and of very splintery structure.



## 193 PREHISTORIC

## KNIFE

## LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.91 \times 1.16 \times .5$  inches.  $4.8 \times 2.9 \times 1.3$  centimetres. Weight: 1.161 ounces. 32.932 grammes  
 Specific gravity: 2.9660; hardness: 6.5. *Nephrite*  
 Color: Dark spinach-green with a light straw-colored sheen



A knife found among the pile-dwelling remains of Lake Neuchâtel. Only the faces and the lower, cutting end have been worked, the rest of the piece showing all the crude markings of the original fragment from which it was broken. The cutting edge has been ground away more at one side than the other.

The material, which is only subtranslucent, has a fibrous, partly interwoven structure which in some places exhibits a cream-colored sheen.

## 194 PREHISTORIC

## KNIFE

## LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.56 \times 1.06 \times .47$  inches.  $4.0 \times 2.7 \times 1.2$  centimetres. Weight: 1.006 ounces. 28.543 grammes  
 Specific gravity: 3.2433; hardness: 7.0. *Jadeite*  
 Color: Very light green streaked with creamy white; of calcined appearance

A knife broken or unfinished at the top, and hammer-roughened on both sides after the piece had been entirely smoothed by grinding. It was found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland.

The material is subtranslucent and of finely crystalline structure, broken up by clouded veinings of pale green and creamy white.

## 195 PREHISTORIC

## KNIFE

## LAKE NEUCHÂTEL, SWITZERLAND

Dimensions:  $1.56 \times .84 \times .41$  inches.  $4.0 \times 2.2 \times 1.0$  centimetres. Weight: .664 ounce. 18.829 grammes  
 Specific gravity: 3.0063; hardness: 6.5. *Nephrite*  
 Color: Translucent olive-green with a patch of light variegated brown

A small thick knife found among the remains of the ancient pile-dwellings of Lake Neuchâtel, Switzerland. The sides show that it was sawed and fractured from a larger mass and then fashioned and smoothed by grinding.

The material is translucent and very compact, with a splintery structure parallel to the flat sides. In several places the fractures are colored yellow and brown by infiltration.

## 196 PREHISTORIC

## KNIFE (WITH HORN HANDLE)

## LAKE BIENNE, SWITZERLAND

Dimensions:  $2.28 \times .91 \times .5$  inches.  $5.8 \times 2.3 \times 1.3$  centimetres. Weight: 1.404 ounces. 39.822 grammes  
 Specific gravity: 3.2627; hardness: 7.0. *Jadeite*  
 Color: Light greenish-gray

A knife found among the remains of the ancient pile-dwelling settlement discovered at Lüscherz (Locraz), Lake Biemme, Switzerland. It has a sharp cutting edge at one end, produced by grinding mostly on one face. The upper end has been roughly hammered to secure it in its holder of deer-horn, which has been hollowed out and smoothed at the top, probably to receive another knife or some similar implement.

The material is subtranslucent and shows a compact crystalline structure more or less broken by irregular cracks.

Systematic exploration of the remains of the prehistoric lake-dwellings found in Lake Biemme, in front of the village of Locraz, did not begin until 1873, though the existence of such remains had come to the knowledge of archaeologists somewhat earlier. The "relic-bed" in which most of the finds were made consisted of sandy clay or loam varying in thickness from two and a half feet near the shore to seven and a half feet farther out. This represented the

growth of deposit during the existence of the prehistoric people who had erected and occupied the pile-dwellings. It rested on the original bed of the lake, a clayey earth filled with pebbles, into which the piles had been driven, and was overlain by a bed, two to five feet in thickness, of sand and mud mixed with gravel, the growth of the many centuries which had elapsed between the close of the lake-dwelling period there and the present time. The settlement covered about four acres, and rested on piles of oak, fir, and beech.

Judging from the variety of objects found (including horn, bone, pottery, and pieces of cloth), the sparseness of flint tools, the beauty and the polish of the jade and other stone implements, and the preponderance of the remains of domestic over-wild animals, the people who made their home here must have belonged to an advanced stage of the neolithic or later stone age, and must have made considerable progress in industrial arts and general culture.

Locraz is the only settlement on Lake Biemme represented in the Collection.



## 197 PREHISTORIC

## KNIFE (WITH HORN HANDLE)

## LAKE BIENNE, SWITZERLAND

Dimensions:  $1.16 \times 1.06 \times .34$  inches.  $2.9 \times 2.7 \times .9$  centimetres. Weight: .435 ounce. 12.347 grammes  
 Specific gravity: 2.9965; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with faint yellowish veinings

A small cutting-implement found in the remains of the ancient pile-dwellings in front of Lüscherz (Locraz), Lake Biemme, Switzerland. It has an admirable, almost crescent-shaped cutting edge produced by grinding from both faces, one of which still retains much of the roughness of the original mass from which the piece had been broken. It is set in the blunt end of a prong of a deer's horn, which is still in an excellent state of preservation. The upper end of the horn has

been ground down so that all the convolutions of the horn are obliterated, and this suggests that this handle may in turn have been set in another bone or wooden handle so that it could be used as a hatchet.

The material is translucent and very compact in texture, and of schistose structure, bedded parallel with the face of the piece.

## 198 PREHISTORIC

## HATCHET

## LAKE CONSTANCE

Dimensions:  $3.47 \times 1.47 \times .59$  inches.  $8.8 \times 3.7 \times 1.5$  centimetres. Weight: 3.277 ounces. 92.190 grammes  
 Specific gravity: 2.9035; hardness: 6.5. *Nephrite*  
 Color: Ashy-gray and reddish-brown

A hatchet, much altered exteriorly, resembling anhydrous anthophyllite, found among the remains of the ancient pile-dwellings of Lake Constance, and obtained from the captain who was carrying on excavations there for the Curator of the Rosgarten Museum at Constance. The surface of the piece has been so completely altered by the action of fire that it is hard to tell just how the object was formed. Slight traces at the sides, however, seem to indicate that it was severed from a larger mass by sawing and fracture. The exterior material is opaque and not more than 2 in hardness, while the greenish interior is unaltered and has a hardness of 6.5. The structure at the surface is almost earthy and amorphous, whereas in the interior it is compact, almost fibrous, and resembles fibrolite. Below the ashy exterior and between it and the unaltered centre is a two-colored zone of pale brown.

Under the microscope there is a faint suggestion of patches derived from previous pyroxene, but the amphibole fibres are in a confused aggregation with occasional longer streaks of nearly parallel fibres. There is also a yellowish stain in part of the section, seemingly occasioned by hydrous oxide of iron. A brown mineral in another part

of the same section is in thin plates, not definitely bounded by crystallographic planes. Its exact nature is uncertain, but it suggests brown mica.

The Lake Constance region has been very thoroughly explored since the first discovery, in 1856, of pile-dwellings at Wangen on the Unter See, and has furnished many prehistoric relics. This is especially true of the western arms of the lake—the Unter See and the Ueberlinger See. Quite a number were of jade. Mr. Ludwig Leiner, Curator of the Rosgarten Museum at Constance, states that of 8858 specimens collected from 36 settlements in the region, 1371 were of nephrite, 42 of jadeite, and 46 of chloromelanite (a dark heavy variety of jadeite), exclusive of 154 splinters or fragments of nephrite found in a single dam at Maurach on the eastern shore of the Ueberlinger See, showing that the completed objects had been manufactured on the spot, and not brought from the East by original immigrants who had settled here, or obtained by barter in later times, as has been claimed by some who hold that jade is exclusively a product of the East.

## 199 PREHISTORIC

## HATCHET

## LAKE CONSTANCE

Dimensions:  $2.56 \times 1.5 \times .56$  inches.  $6.5 \times 3.8 \times 1.4$  centimetres. Weight: 1.676 ounces. 47.5035 grammes  
 Specific gravity: 2.9228; hardness: 6.5. *Nephrite*  
 Color: Mottled brown with an incrustation of light gray; of a calcined appearance

A hatchet from the site of an ancient pile-dwelling in Lake Constance. The surface was originally very smooth, but more than half of it has been destroyed by weathering or fire action. The faces, which are slightly convex in all directions, are parallel to the apparent

schistose structure of the material, and are considerably fractured. The upper part is covered to some depth on both faces with an infiltration and carbonization of another mineral somewhat resembling carbonate of lime. This is much softer than the nephrite.

## 200 PREHISTORIC

## HATCHET

## LAKE CONSTANCE

Dimensions:  $3.75 \times 1.97 \times .75$  inches.  $9.0 \times 5.0 \times 1.9$  centimetres. Weight: 5.380 ounces. 152.522 grammes  
 Specific gravity: 3.3095; hardness: 7.0. *Jadeite*  
 Color: Very dark green, almost black

A long hatchet of somewhat irregular form, found among the ruins of some ancient lake-dwellings on Lake Constance. It is almost entirely smooth, but dull, excepting at the sides where it is slightly roughened and shows subsurface reflections which are due to hammering, all traces of which have not been removed in the smoothing process. The cutting edge, which was originally produced by grind-

ing from both faces, has been reground on one face and is slightly notched, probably through hard usage. The surface is also broken in several places.

The material, which is homogeneous and compact, is an opaque dark green, and shows inclusions of a pale, almost white, mineral resembling feldspar.



## 201 PREHISTORIC

## HATCHET

WALLHAUSEN, LAKE CONSTANCE

Dimensions:  $2.75 \times 1.38 \times .5$  inches.  $7.0 \times 3.5 \times 1.3$  centimetres. Weight: 2.355 ounces. 66.736 grammes  
 Specific gravity: 2.9911; hardness: 6.5. *Nephrite*  
 Color: Dark green with mottlings of lighter green and brown

A broken hatchet with remarkably straight sides and a very sharp curved cutting edge produced by grinding from both faces, and ground away more at one side than the other. One of the narrow sides shows that it was cut from a larger piece, having been sawn from one face and the unsawn part then cut or broken through from

the other. The cutting-marks still remain. At the broken end there is a compact ashy-white crust evidently formed while buried in the lake-bottom.

The material is translucent, compact in texture, and schistose in structure. In the fractures of the mineral is oxide of iron.

## 202 PREHISTORIC

## HATCHET

WALLHAUSEN, LAKE CONSTANCE

Dimensions:  $2.56 \times 1.53 \times .62$  inches.  $6.5 \times 3.9 \times 1.6$  centimetres. Weight: 3.286 ounces. 93.159 grammes  
 Specific gravity: 3.3617; hardness: 7.0. *Jadeite*  
 Color: Dull dark green

A hatchet found among the remains of the ancient pile-dwellings near Wallhausen, Lake Constance. It appears to have been smoothed all over by grinding, and then roughened on the sides by hammering or pecking, showing that it was secured, or intended to be secured, in a holder or handle.

The material is subtranslucent on the cutting edge, compact and granular, the pocket lens showing the crystalline structure very distinctly. On the broken head of the piece there is an ashy-limy deposit containing scorïæ.

## 203 PREHISTORIC

## KNIFE

LAKE CONSTANCE

Dimensions:  $3.31 \times .75 \times .38$  inches.  $8.4 \times 1.9 \times .9$  centimetres. Weight: 1.005 ounces. 28.482 grammes  
 Specific gravity: 3.0146; hardness: 6.5. *Nephrite*  
 Color: Dark spinach-green with mottlings of lighter green and patches of brown

A knife from the remains of the pile-dwellings of Lake Constance. It is smooth but not polished, and gives evidence on the broader side of having been cut or severed from a larger piece. The other side, which is much thinner, shows an apparent weathering or alteration of the mineral into a softer ashy-gray substance. The faces of the piece are parallel with the schistose structure of the material, which is well shown.

The material is translucent. Internal fractures are apparent through the translucent material, and are paler in color. In several places they have absorbed hydrous oxide of iron, imparting a brown tint to them.

From the late Dr. Thomas Wilson of the U. S. National Museum.

## 204 PREHISTORIC

## KNIFE

MAURACH, LAKE CONSTANCE

Dimensions:  $1.56 \times 1.25 \times .44$  inches.  $4.0 \times 3.2 \times 1.1$  centimetres. Weight: .903 ounce. 25.588 grammes  
 Specific gravity: 2.8746; hardness: 6.5. *Rhodo-nephrite*  
 Color: Light gray with an outer staining of dead-oak-leaf

A knife broken at one end, and with a cutting edge at the other which seems to have been reground more than once (hence, perhaps, its dumpiness) and since the outer surfaces received their color. The name *rhodo-nephrite* was applied to this material by Mr. Ludwig Leiner, Curator of the Rosgarten Museum at Constance (from whom it was received) on account of its color, which is dead-oak-leaf on the exposed surfaces.

The material is opaque, and the object has the appearance of having been weathered. At one of the sides there is a cavity, surrounding which is a talcose mineral which may be either the result of the alteration of the nephrite itself or a part of the original gangue substance in which it was formed. This mineral is white, and is composed of small crystal bunches with a highly lamellar folia.



205 PREHISTORIC KNIFE BODMANN, LAKE CONSTANCE

Dimensions:  $2.53 \times 1.56 \times .25$  inches.  $6.4 \times 4.0 \times .6$  centimetres. Weight: 1.050 ounces. 29.760 grammes  
 Specific gravity: 3.0037; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with brown stainings

A thin flat knife with an almost crescent-shaped cutting edge and a thin narrow head almost as sharp as the cutting edge. One face shows the original fractures left by the severing process by which it was detached from the original mass. Compared with its surface area, it is perhaps the thinnest archaeological object in the Collection. It is one of the pieces found among the remains of the pile-dwellings at Bodmann, Lake Constance, and was presented to the Collection by Mr. Ludwig Leiner, Curator of the Rosgarten Museum, Constance.

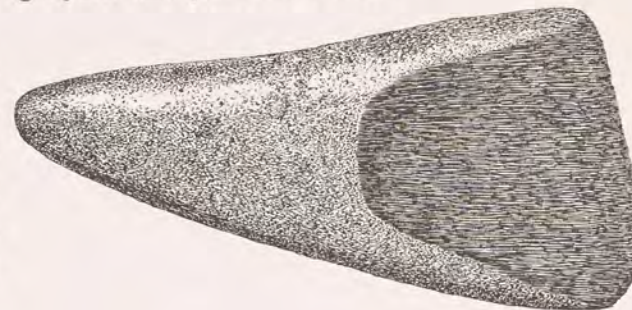
The material is translucent and very compact, with large splintery structure. It has the peculiar substance and color of many of the Oceanic or New Zealand jades.

Under the microscope it is seen to be made up of delicate fibres which curve in several directions and extinguish light in irregular patches. There is a yellowish-brown tabular mineral with six sides to some crystals. The same substance, which appears to be a hydrous oxide of iron, also occurs in minute particles.

206 PREHISTORIC LONG KNIFE FRANCE

Dimensions:  $5.0 \times 2.38 \times .78$  inches.  $12.7 \times 6.0 \times 2.0$  centimetres. Weight: 8.467 ounces. 240.043 grammes  
 Specific gravity: 3.4058; hardness: 7.0. *Jadeite*  
 Color: Light spinach-green with grayish and yellowish tints

A long cutting-impliment with sharp straight edge and rounded sides which slope up unsymmetrically to a small blunt-pointed head in the manner of a hatchet. It was no doubt used as a knife by the prehistoric dweller. The piece was originally roughly ground into shape, and



the lower half of both faces later ground down smooth to a cutting edge. At a broken place on one side the fracture is such as usually occurs in jadeite. The material is opaque or only subtranslucent. Small crystals of garnet are included throughout the entire piece.

207 PREHISTORIC HATCHET BRITTANY, FRANCE

Dimensions:  $2.94 \times 1.66 \times .5$  inches.  $7.5 \times 4.2 \times 1.3$  centimetres. Weight: 2.703 ounces. 76.639 grammes  
 Specific gravity: 3.3941; hardness: 7.0. *Chloromelanite*  
 Color: Very dark green, almost black

A long hatchet of remarkably beautiful form, with a slightly crescent-shaped cutting edge and a pointed head, and smooth all over except at the sides, which are still slightly roughened, probably a secondary process, as the faces still show subsurface reflections which are evidently due to hammering. It is possible, however, that the

object was first hammered into its present shape and then polished. At the upper end it is still slightly rough, as if the object had not been entirely finished, or as if it had received a blow.

The material is an opaque greenish-black, and is both homogeneous and compact.

208 PREHISTORIC HATCHET ALZONNE, FRANCE

Dimensions:  $2.19 \times 1.56 \times .59$  inches.  $5.5 \times 4.0 \times 1.5$  centimetres. Weight: 2.534 ounces. 71.8372 grammes  
 Specific gravity: 3.4112; hardness: 7.0. *Jadeite*  
 Color: Very dark green, almost black, with a veining and mottling of brown

A short stumpy hatchet with broad slightly crescent-shaped cutting edge from which the sides slope upward and inward to a narrow head. It has been ground all over, but still shows natural pittings and weatherings. There is an apparent bedding in the material parallel to the faces, several fractures of which show brownish inclusions.

209 PREHISTORIC HATCHET ALZONNE, FRANCE

Dimensions:  $1.78 \times 1.25 \times .5$  inches.  $4.5 \times 3.2 \times 1.3$  centimetres. Weight: 1.568 ounces. 44.463 grammes  
 Specific gravity: 3.3910; hardness: 7.0. *Jadeite*  
 Color: Dark olive-green with a mottling of brown

A small hatchet, short and stumpy, with a fairly good cutting edge ground from both faces, which are smoothed. The sides, which are of unequal length, are roughened by pecking, the better to secure the implement in its socket. At the upper end the rough natural markings of the original boulder are apparent.

The material, which is finely translucent, is of a dark olive color and contains a number of inclusions of a dark mineral with an apparent crystalline outline, probably garnet. The entire piece shows some tiny veinings of brown.



## 210 PREHISTORIC

## HATCHET

ALZONNE, FRANCE

Dimensions:  $2.12 \times 1.47 \times .47$  inches.  $5.4 \times 3.7 \times 1.2$  centimetres. Weight: 1.750 ounces. 49.597 grammes  
 Specific gravity: 3.4313; hardness: 7.0. *Chloromelanite*  
 Color: Very dark green, almost black

A small flat hatchet of very regular form, smooth all over but not polished, and only slightly roughened at the two sides. The cutting edge, which is much broader than the head of the piece, is broken and notched. The head has also been broken. The material is opaque, homogeneous and compact, but there are tiny pittings suggesting that some included mineral has weathered out.

## 211 PREHISTORIC

## KNIFE

ALZONNE, FRANCE

Dimensions:  $2.38 \times 1.78 \times .66$  inches.  $6.0 \times 4.5 \times 1.7$  centimetres. Weight: 2.913 ounces. 82.5948 grammes  
 Specific gravity: 2.9603; hardness: 6.5. *Nephrite*  
 Color: Dark olive-green with veinings of gray and patches of gray and brown

A short thick knife with the cutting edge ground away more at one side than the other. It is smooth all over, but not polished. The material is translucent. On one face, near the cutting edge, is a large grayish patch enclosed in the darker brownish-green mineral, and near the upper end, as well as on one face, the color is russet-brown, due probably to staining or to the exterior weathering of the boulder.

## 212 PREHISTORIC

## HATCHET

AUTHON, FRANCE

Dimensions:  $2.75 \times 1.53 \times .66$  inches.  $7.0 \times 3.9 \times 1.7$  centimetres. Weight: 3.307 ounces. 93.676 grammes  
 Specific gravity: 3.4506; hardness: 7.0. *Jadeite*  
 Color: A mottling of olive-green and a darker shade of green

A hatchet with wide rounded cutting edge (now much notched and worn away more at one side than the other), a narrow thick head slightly roughened by pecking or hammering, and regularly curving faces smoothed by grinding, the sides being left somewhat rough to assist in securing the piece firmly in its holder or handle. The material is a dark olive-green, almost opaque, with darker internal patches measuring from one to three millimetres.

## 213 PREHISTORIC

## HATCHET

PUYLAURENS, FRANCE

Dimensions:  $3.31 \times 1.78 \times .94$  inches.  $8.4 \times 4.5 \times 2.4$  centimetres. Weight: 5.973 ounces. 168.326 grammes  
 Specific gravity: 3.5474; hardness: 7.0. *Jadeite*  
 Color: Dark opaque green spotted with reddish-brown

A hatchet with a rounded cutting edge and sides which slope upward and inward to a narrow rounded head or top. It is smoothed near the cutting edge, but all the rest of the piece has been hammer-roughened. This is most pronounced where the garnet inclusions, which are plainly seen with the lens, have been broken out of their cavities, or have weathered out.

## 214 PREHISTORIC

## CHISEL

BONNIEUX, VAUCLUSE, FRANCE

Dimensions:  $2.59 \times .91 \times .66$  inches.  $6.6 \times 3.3 \times 1.7$  centimetres. Weight: 2.000 ounces. 56.647 grammes  
 Specific gravity: 3.441; hardness: 7.0. *Jadeite*  
 Color: Dark green and brown

A small thick chisel with a rounded cutting edge slightly notched (probably through use). Smoothed on both faces, but left rough at the sides and at the upper end, one of the sides retaining much of the original roughness of the pebble from which it was made. The material, which is faintly translucent, almost opaque, is in color a dark green interstratified with a brownish-green running lengthwise through the piece. On the thinnest edges it is faintly green by translucent light.



## 215 PREHISTORIC

## HATCHET

ST. JULIAN, HAUTE-GARONNE, FRANCE

Dimensions:  $2.72 \times 1.31 \times .72$  inches.  $6.9 \times 3.3 \times 1.8$  centimetres. Weight: 3.396 ounces. 96.2653 grammes  
 Specific gravity: 3.4494; hardness: 7.0. *Jadeite*  
 Color: Dark spinach-green with grayish and brownish stainings

A hatchet entirely hammered into shape and then rubbed down and smoothed to an almost straight, somewhat blunt, cutting edge. The material is opaque, and by reflected light is seen to be a dull gray intermingled with a black form of the same mineral.

## 216 PREHISTORIC

## HATCHET

ST. JULIAN, HAUTE-GARONNE, FRANCE

Dimensions:  $2.75 \times 1.62 \times .75$  inches.  $7.0 \times 4.1 \times 1.9$  centimetres. Weight: 3.841 ounces. 108.880 grammes  
 Specific gravity: 3.4304; hardness: 7.0. *Jadeite*  
 Color: Spinach-green with dark mottlings and light grayish stains

A small hatchet with slightly curved cutting edge from which the sides slope almost symmetrically to a narrow pointed head. The implement seems to have been first hammered into shape and then rubbed down smooth on the faces, leaving the edges unsmoothed. Minute crystals of essonite garnet are disseminated throughout the material.

## 217 PREHISTORIC

## HATCHET

ST. JULIAN, HAUTE-GARONNE, FRANCE

Dimensions:  $3.47 \times 1.84 \times 1.0$  inches.  $8.8 \times 4.7 \times 2.5$  centimetres. Weight: 7.472 ounces. 211.827 grammes  
 Specific gravity: 3.5369; hardness: 7.0. *Jadeite*  
 Color: Light spinach-green with mottlings and seams of brown and gray

A small thick hatchet with a slightly curved cutting edge, and bulging faces parallel with the bedding of the material, which is made up of a number of layers or veins of a yellow, impure green and a darker variety. The entire piece contains many essonite garnets, and in a cavity near the upper end of one of the faces, which had never been ground down, there are still the original fractured surfaces of a garnet almost essonite in color.

## 218 PREHISTORIC

## HATCHET

ST. JULIAN, HAUTE-GARONNE, FRANCE

Dimensions:  $3.97 \times 1.56 \times .84$  inches.  $10.1 \times 4.0 \times 2.1$  centimetres. Weight: 5.648 ounces. 160.122 grammes  
 Specific gravity: 3.3706; hardness: 7.0. *Jadeite*  
 Color: Light spinach-green with markings of very dark brown and light brownish and grayish stains upon the rough surface

A relatively long narrow hatchet with a slightly curved cutting edge from which the sides slope up symmetrically to a pointed head. The lower half of each of the slightly rounded faces has been ground down to a sharp edge, and almost polished. Running diagonally across these faces is a very thin white vein, and a brown incrustation, apparently calcareous, covers all of one side and part of one face of the implement, evidently due to long burial.

## 219 PREHISTORIC

## AXE

MEXICO

Dimensions:  $6.81 \times 2.38 \times 1.25$  inches.  $17.3 \times 6.0 \times 3.2$  centimetres. Weight: 1 pound 11.062 ounces. 767.213 grammes  
 Specific gravity: 3.3034; hardness: 7.0. *Jadeite*  
 Color: Black

A long thick narrow implement, narrower at the top than at the lower end, where both faces had been ground to form a very blunt edge. It has been smoothed by grinding, but still shows on the surface many pits and rough places, due to the disintegration of isolated crystals of jadeite or hornblende which are present and are irregularly distributed throughout the mass. The weathered appearance of the piece suggests that it was probably buried in limestone strata, or in a limestone cave, as at the lower end there is a cavity



seventeen millimetres long and six millimetres wide, and more than a dozen smaller cavities in various parts of the mass that are filled with a compact white substance which effervesces readily on the applica-

about 0.8 millimetre long and smaller. They are strongly pleochroic, with amphibole cleavage. Cross-sections show the orthopinacoid (100) strongly developed, besides the unit prism faces (110). The



tion of hydrochloric acid, proving it to be the limestone which was deposited after the object had been lost or buried by the original owner.

The material is faintly subtranslucent, and on a cut surface shows a very compact crystalline structure with occasional markings and veinings.

A study of thin sections under the microscope shows that it is an aggregation of small jadeite crystals with a few larger ones of irregular shape. The mass is streaked with greenish, dark-colored specks, which appear under the microscope as opaque particles crowded together in the larger jadeite crystals as products of alteration. Parts of the jadeite grains are colored pale green. In places the jadeite crystals are grouped in fan-like aggregates of radiating prisms. Cross-sections of these exhibit the characteristic prismatic cleavage. These crudely spherulitic aggregates occur in bands grading into small-grained layers. There are rather numerous patches of the colorless indeterminable mineral, and somewhat lenticular crystals

colors are dark bluish-green to pale yellow, and suggest an impure glaucophane.

A chemical analysis by Walden, with reduction by Penfield, gave the following results:

		Diopside Ca(MgFe)(SiO <sub>3</sub> ) <sub>2</sub>	Eggsite NaFe(SiO <sub>3</sub> ) <sub>2</sub>	Jadeite NaAl(SiO <sub>3</sub> ) <sub>2</sub>	Jadeite Cal. to 100%	Jadeite Theory
Silica . . .	56.69	4.98	6.72	44.99	57.85	59.40
Alumina . . .	20.46			20.46	26.31	25.25
Ferrie oxide .	4.49		4.49			
Ferrous oxide .	.75	.75				
Magnesia . . .	1.64	1.28		.36		
Lime . . .	3.28	2.29		.99		
Soda . . .	11.65		1.74	9.91	15.84	15.35
Potash . . .	1.15			1.15		
Loss on ignition	.48					
	100.59	9.30	12.95	77.86	100.00	100.00

## 220 PREHISTORIC

## SMALL CHISEL

MEXICO

Dimensions: 1.56 × .62 × .38 inches. 4.0 × 1.6 × .9 centimetres. Weight: .577 ounce. 16.359 grammes  
Specific gravity: 3.3384; hardness: 7.0. *Jadeite*  
Color: Bluish-green with inclusions of light gray and a few specks of black

A short thick chisel, evidently only a portion of a larger implement from which it had been split by partial sawing and the fracturing of the unsawn core. It has been ground smooth on all sides and has been pierced through submarginally a little way above the cutting edge, showing that it was intended for suspension as an ornament or amulet.

The material is translucent and is a typical piece of Mexican jadeite. The crystalline structure contains a great many small elongated streaks and spots of greener coloring matter in a bluish-green magma.

## 221 PREHISTORIC

## CHISEL

MEXICO

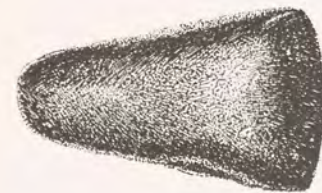
Dimensions: 2.31 × .62 × .56 inches. 5.9 × 1.6 × 1.4 centimetres. Weight: 1.180 ounces. 33.458 grammes  
Specific gravity: 3.3772; hardness: 7.0. *Chloromelanite*  
Color: Black

A thick chisel with rounded body and sharp cutting edge formed by equal grinding from two opposite sides.  
The whole surface has been ground smooth.

## 222 PREHISTORIC

## HATCHET

GUATEMALA



Dimensions: 1.75 × 1.03 × .47 inches. 4.4 × 2.6 × 1.2 centimetres. Weight: .865 ounce. 24.517 grammes  
Specific gravity: 3.2925; hardness: 7.0. *Jadeite*  
Color: Very dark green, almost black

A small hatchet with a slightly curved cutting edge in perfect condition, and a narrow, somewhat rounded, head which has been slightly roughened by pecking. With this exception and the exception of a fracture on one side not reached in the grinding, the piece has been smoothed all over.



223 PREHISTORIC

## PART OF HATCHET

GUATEMALA

Dimensions:  $1.56 \times 1.19 \times .72$  inches.  $4.0 \times 3.0 \times 1.8$  centimetres. Weight: 1.506 ounces. 42.683 grammes  
 Specific gravity: 3.3687; hardness: 7.0. *Jadeite*  
 Color: Green with minute specks of light green

The lower or cutting end of a hatchet which evidently has been broken with considerable violence. The break is undoubtedly of ancient origin. Except where broken and at the blunt cutting edge, the piece is polished, but not as highly as the material admits of.

There is a depression on one face which escaped polishing and contains the original unworked part of the material itself.

The color is green, partly translucent, covered throughout the whole surface of the polished part with small light-green markings.

224 PREHISTORIC

## CHISEL

GUATEMALA

Dimensions:  $2.38 \times 1.0 \times .69$  inches.  $6.0 \times 2.5 \times 1.7$  centimetres. Weight: 1.803 ounces. 52.090 grammes  
 Specific gravity: 3.3548; hardness: 7.0. *Jadeite*  
 Color: Very dark green, almost black



A chisel with thick body, wide cutting edge, and smoothed faces, the sides and the upper part of the body being left rough.

The material is opaque, homogeneous and compact, with a straight vein 0.9 millimetre wide running horizontally across the piece.

225 PREHISTORIC

## KNIFE

GUATEMALA

Dimensions:  $1.78 \times 1.38 \times .56$  inches.  $4.5 \times 3.5 \times 1.4$  centimetres. Weight: 2.007 ounces. 56.889 grammes  
 Specific gravity: 3.3842; hardness: 7.0. *Jadeite*  
 Color: Very dark green, almost black

A cutting-implement with flat top, straight sides, and a blunt edge. It has been ground into shape and smoothed all over. It was found in the spring of 1895 with a number of other things at an elevation of 11,000 feet on the volcano Tacana near the Mexican frontier. (See No. 298.)

The material is homogeneous and quite compact, but not translucent even on the thin edge. By the pocket lens the mass is shown to be made up of a light and a darker colored green mineral.

226 PREHISTORIC

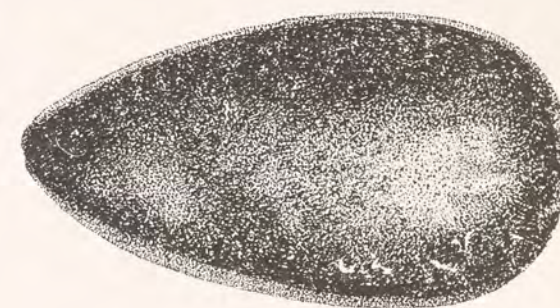
## HATCHET

JAMAICA, WEST INDIES

Dimensions:  $2.97 \times 1.56 \times .69$  inches.  $7.5 \times 4.0 \times 1.7$  centimetres. Weight: 3.210 ounces. 91.003 grammes  
 Specific gravity: 3.3151; hardness: 7.0. *Jadeite*  
 Color: Black with delicate specks of light gray

A hatchet of perfect outline and fine finish. It has a pointed head, a wide crescent-shaped cutting edge, and slightly convex faces which slope gently to the thin sides. It has been beautifully smoothed all over by grinding, but shows no grinding facets.

The material is opaque and very compact.



227 PREHISTORIC

## HATCHET

WEST INDIES (?)

Dimensions:  $2.72 \times 1.47 \times .97$  inches.  $6.9 \times 3.7 \times 2.4$  centimetres. Weight: 3.705 ounces. 105.0513 grammes  
 Specific gravity: 3.3168; hardness: 7.0. *Jadeite*  
 Color: Very dark green flaked with lighter green

A hatchet of rounded section, with curved faces widening below to a sharp crescent-shaped edge which has been ground down evenly from both faces. Finely polished all over with the exception of the upper

end, which is rough. The two sides have been lightly chipped about half-way down to prevent the piece from slipping when fixed in a handle or holder.



## AA ABORIGINAL

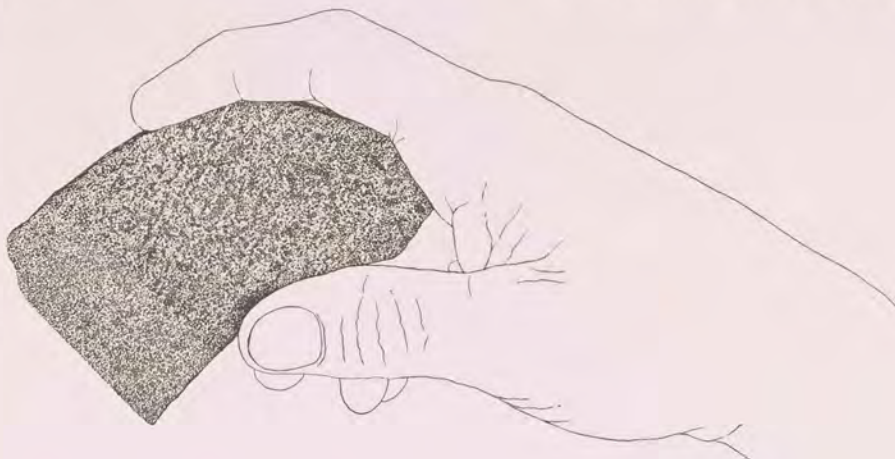
## GRITSTONE

## BRITISH COLUMBIA

Dimensions:  $3.38 \times 1.97 \times .38$  inches.  
 $8.5 \times 5.0 \times .9$  centimetres.  
 Sandstone

A grit-stone used to cut grooves in nephrite, found in surface and general digging at the main burial-place at Lytton, British Columbia, in 1897, by the Jesup North Pacific Expedition. The accompanying illustration shows the manner of holding the cutter. Similar objects were used by the natives of New Zealand in working jade.

Presented to the Collection by Morris K. Jesup, Esq.



## 228 ABORIGINAL

## AXE

## BRITISH COLUMBIA

Dimensions:  $5.56 \times 2.0 \times .59$  inches.  $14.1 \times 5.1 \times 1.5$  centimetres. Weight: 8.658 ounces. 245.465 grammes  
 Specific gravity: 2.9975; hardness: 6.5. *Nephrite*  
 Color: Grayish-green veined with brown and black and blackened superficially over a large area

An axe with a straight, slightly chipped cutting edge formed by equal grinding from both faces, and a little wider than the top or butt. The faces are almost flat, but rounded and reduced by grinding to a relatively thin edge on one side. The other side shows how the piece was severed from a larger piece by partial sawing from both faces and then by breaking the narrow unsawn portion by a blow. It has been polished all over except in one or two places where an original depressed fracture has not been entirely reached.

The material is opaque. Its structure is not very evident, but is apparently crystalline and granular. The darker veins, which are a pronounced feature of the specimen, are probably of the same material as the mass, but darkened through a content of iron, shown by brown weathering in several places. The superficial blackening is probably due to infiltration of some foreign substance.

## 229 ABORIGINAL

## ADZE

## BRITISH COLUMBIA

Dimensions:  $2.97 \times 1.56 \times .47$  inches.  $7.5 \times 4.0 \times 1.2$  centimetres. Weight: 2.785 ounces. 78.9565 grammes  
 Specific gravity: 3.0090; hardness: 6.5. *Nephrite*  
 Color: Black with light greenish-gray translucent spots with a silky sheen

An adze with a slightly curving cutting edge formed by grinding from one face only, the other face,—the back of the implement,—which is slightly bowed longitudinally, having been ground originally all over. Several fractures found on the piece are evidently not original, and are due probably to accident or use since the implement was fashioned.

The structure of the material is distinctly bedded, and also “por-

phyritic,” the light-colored portions being suspended in a darker matrix like the crystals in so-called “porphyritic rocks.” The porphyritic structure here appears to be due to a crushing and shearing of the mass, the spots representing uncrushed areas of the original compact, homogeneous nephrite, while the dark matrix is made up of minutely crushed fragments which have flowed around the more resistant portions.

## 230 ABORIGINAL

## LONG NARROW HATCHET

## BRITISH COLUMBIA

Dimensions:  $8.75 \times 1.75 \times .62$  inches.  $22.2 \times 4.4 \times 1.5$  centimetres. Weight: 10.473 ounces. 296.896 grammes  
 Specific gravity: 2.9585; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with flecks and light and dark brown stains

A long narrow hatchet found in Grave 5 at the east end of Nocola Lake, British Columbia, by the Jesup North Pacific Expedition in 1897, and presented to the Collection by Morris K. Jesup, Esq.

The material is subtranslucent and compact. At the upper broken end it is somewhat softer than elsewhere, due either to heat or

decomposition. Here also the fracture is round and slightly splintery. Some cream-yellow spots on the flat face of the piece are slight alterations and fractures which have been polished. On one side there is a very even brownish incrustation, due to the action of carbonate of lime or some other substance.



231 ABORIGINAL

HATCHET

BRITISH COLUMBIA

Dimensions:  $2.31 \times 1.44 \times .41$  inches.  $5.9 \times 3.6 \times 1.0$  centimetres. Weight: 1.781 ounces. 50.479 grammes  
Specific gravity: 2.9884; hardness: 6.5. *Nephrite*  
Color: Light greenish-gray with veinings of black and a satiny sheen on the faces

A small flat hatchet with straight cutting edge (now much notched), and rounded sides which converge into a narrow head or top. It is smooth all over except where original depressed fractures could not be reached in the general smoothing process.  
The material, which is barely translucent, has a finely bedded

structure. Many cracks parallel to the bedding appear to be lines of incipient decomposition. The material composing the dark veins grades imperceptibly into that of lighter color, and does not seem to be essentially different from it.

232 ABORIGINAL

HATCHET

BRITISH COLUMBIA

Dimensions:  $2.22 \times 1.84 \times .44$  inches.  $5.6 \times 4.7 \times 1.1$  centimetres. Weight: 2.459 ounces. 69.725 grammes  
Specific gravity: 2.9946; hardness: 6.5. *Nephrite*  
Color: Dark pear-leaf-green with lighter shades of green along the flaws

A hatchet with very slightly curved cutting edge (in a good state of preservation) formed by grinding from both faces, and sides which rise unsymmetrically to the head, which is oblique, one thin edge, reduced by grinding, being shorter than the other unreduced side. The implement has been polished all over except in certain original

depressed fractures which could not be reached in the polishing process.  
The material is translucent, very homogeneous and compact, and the structure indistinctly bedded, with many fibres and cracks parallel to the bedding.

233 ABORIGINAL

HATCHET

BRITISH COLUMBIA

Dimensions:  $2.62 \times 1.78 \times .5$  inches.  $6.7 \times 4.5 \times 1.3$  centimetres. Weight: 2.618 ounces. 74.229 grammes  
Specific gravity: 2.9768; hardness: 6.5. *Nephrite*  
Color: Grayish-green with veins and mottlings of dark brown and black

A hatchet, tapering to the head, which is much broken, and much thicker near the cutting edge (also much broken) than toward the top. The sides are almost flat. No cutting-marks are visible, and the implement seems to have been formed entirely by grinding.

The material is almost opaque, the structure imperfectly bedded, the texture fibrous, and the fracture splintery and fibrous. The veinings of brown and black seem mainly to follow flaws and cracks, and may therefore be superficial in character.

234 ABORIGINAL

CHISEL

BRITISH COLUMBIA

Dimensions:  $2.06 \times .91 \times .47$  inches.  $5.2 \times 2.3 \times 1.2$  centimetres. Weight: .800 ounce. 22.960 grammes  
Specific gravity: 2.9987; hardness: 6.5. *Nephrite*  
Color: Mottled grayish-green with black veinings

A small chisel of uniform width throughout its whole length. It has a very sharp cutting edge produced by grinding from both faces, and is quite smooth all the way up to the head, which is broken.

The material is subtranslucent and very compact. Where sawn it is seen to be very homogeneous and shows a very characteristic splintery structure. On the broken surfaces the light grayish-green surface is very much rent and fractured, the fracture being darker probably from the infiltration of foreign substances, probably oil.

Studied in thin section under the microscope, there is a somewhat faint suggestion of the patches derived from previous pyroxene, but the amphibole fibres are in a confused aggregation with occasional longer streaks of nearly parallel fibres.

A chemical analysis by Foote, with reduction by Clarke, gave the following results:

	NaAlSi <sub>3</sub> O <sub>6</sub>	Al <sub>2</sub> CaSiO <sub>6</sub>	Nephrite	
Silica . . . . .	56.70	.55	1.05	55.10
Alumina . . . . .	2.01	.23	1.78	
Ferric oxide . . . .				
Ferrous oxide . . . .	5.09			5.09
Magnesia . . . . .	21.91			21.91
Lime . . . . .	12.12		.98	11.14
Soda . . . . .	.14	.14		
Water . . . . .	2.56			1.81
	100.53	.92	3.81	95.05

Abstract

Nephrite . . . . .	95.05
NaAlSi <sub>3</sub> O <sub>6</sub> . . . . .	.92
Al <sub>2</sub> CaSiO <sub>6</sub> . . . . .	3.81
Excess water . . . .	.75
	100.53

The nephrite= $H_4Ca_4(MgFe)_{10}(SiO_3)_{10}$ .

This specimen was obtained in Victoria, British Columbia, in 1886, and was said to have been procured among the Kit-Ax tribe of Nass River, British Columbia.







No. 303  
**SMALL MASK**  
Jadeite  
Mexico

No. 281  
**HATCHET**  
Nephrite  
Eastern Coast of Siberia

No. 306  
**LONG TUBULAR BEAD**  
Jadeite  
Mexico

No. 309  
**AMULET**  
Jadeite  
Mexico

No. 295  
**WEAPON**  
(*Nascah*)  
Nephrite  
British Columbia

No. 308  
**ORNAMENT**  
Jadeite  
Mexico

No. 283  
**KNIFE**  
Nephrite  
Eastern Coast of Siberia

No. 247  
**ADZE IN HOLDER**  
Nephrite  
Alaska

No. 234  
**CHISEL**  
Nephrite  
British Columbia

No. 282  
**CHISEL**  
Nephrite  
Eastern Coast of Siberia

No. 280  
**ADZE**  
Nephrite  
Eastern Coast of Siberia





British Museum







## 235 ABORIGINAL

## CHISEL

## BRITISH COLUMBIA

Dimensions:  $1.69 \times 1.0 \times .53$  inches.  $4.3 \times 2.5 \times 1.5$  centimetres. Weight: 1.151 ounces. 32.6175 grammes  
 Specific gravity: 3.0408; hardness: 6.5. *Nephrite*  
 Color: Dull dark green with veinings of lighter green and a gray weathering in parts

A short thick chisel broken at the top, and showing on the thicker side marks of the original partial sawing from two faces, and the fractured core, still unpolished, by which it was severed from the mass or slab of which it originally formed a part. The cutting edge, still in good condition, was formed by grinding from both faces. The thickness of the sawn unfinished side together with the broken head, and the fact that the cutting edge near the other side is curved unsymmetrically, suggest that this may be only a part of a longer and broader implement.

On one side there are many superficial spots of yellowish-gray, produced by alteration.

The material is opaque and dull, the structure finely bedded, and the texture and fracture fibrous. A peculiarity of the specimen consists in the presence of minute globular bodies scattered irregularly through the mass, having a darker color, a very compact texture, and slightly higher hardness than the rest. On the polished surface they appear as round spots; on a fractured surface, as rounded bodies standing out from the fibrous matrix.

## 236 ABORIGINAL

## KNIFE

## BRITISH COLUMBIA

Dimensions:  $1.91 \times 1.31 \times .41$  inches.  $4.8 \times 3.3 \times 1.0$  centimetres. Weight: .968 ounce. 27.4375 grammes  
 Specific gravity: 2.9083; hardness: 6.5. *Nephrite*  
 Color: Dead-oak-leaf on one face, and a mottling of light brown turning to a cream color on the other

A short knife with wide slanting cutting edge ground equally from both faces, and sides which slope up unsymmetrically to the narrow top. On both faces are fractures which have not been reached in polishing and are still rough.

The material is opaque, the lustre dull, and the structure confused

in its bedding. The specimen, especially on one face, shows alteration by heat, and to this both the light-brown color as well as the softness of the material may be due, though possibly weathering may have contributed to these changes.

## 237 ABORIGINAL

## KNIFE

## BRITISH COLUMBIA

Dimensions:  $2.06 \times 1.16 \times .44$  inches.  $5.2 \times 2.9 \times 1.1$  centimetres. Weight: 1.482 ounces. 41.999 grammes  
 Specific gravity: 3.0093; hardness: 6.5. *Nephrite*  
 Color: Translucent olive-green mingled with an opaque dull gray of light tone

A small wedge-shaped knife with flat faces, sides, and top, and a cutting edge more worn away at one side than the other. It is smoothed all over except at the top, where a few fractures are found, probably the result of accident or use. The hardness of the material is about

normal in the green part, but in the gray it is less than 4. The inferior hardness of this gray part and the intimate intermixture seem to indicate that it is a decomposition product, the nature of which has not yet been determined.

## 238 ABORIGINAL

## SMALL KNIFE

## BRITISH COLUMBIA

Dimensions:  $1.28 \times 1.06 \times .41$  inches.  $3.2 \times 2.7 \times 1.0$  centimetres. Weight: .552 ounce. 15.6375 grammes  
 Specific gravity: 2.9849; hardness: 6.5. *Nephrite*  
 Color: Opaque dull greenish-black

A small knife with wide cutting edge in good condition, formed by grinding from two faces, and a relatively thin narrow top. The sides are not symmetrical, and the specimen presents the appearance of a hatchet which had been ground down by frequent sharpenings to a mere stump. It has been carefully smoothed all over.

The material is compact and homogeneous, but opaque, and the fracture scaly. Its structure is not evident.

## 239 ABORIGINAL

## KNIFE

## BRITISH COLUMBIA

Dimensions:  $1.56 \times 1.44 \times .56$  inches.  $4.0 \times 3.6 \times 1.4$  centimetres. Weight: 1.249 ounces. 35.410 grammes  
 Specific gravity: 3.0020; hardness: 6.5. *Nephrite*  
 Color: Dull grayish-green spotted and veined with black

A thick knife with wide cutting edge slightly notched, and carefully rounded sides which slope symmetrically to a narrow head, now broken. Like No. 238, it presents the appearance of the upper part of a carefully made hatchet of good outline which had been ground away by frequent sharpenings.

The material is opaque, the structure bedded, as is shown by the parallel cracks on broken end, and the fracture scaly.



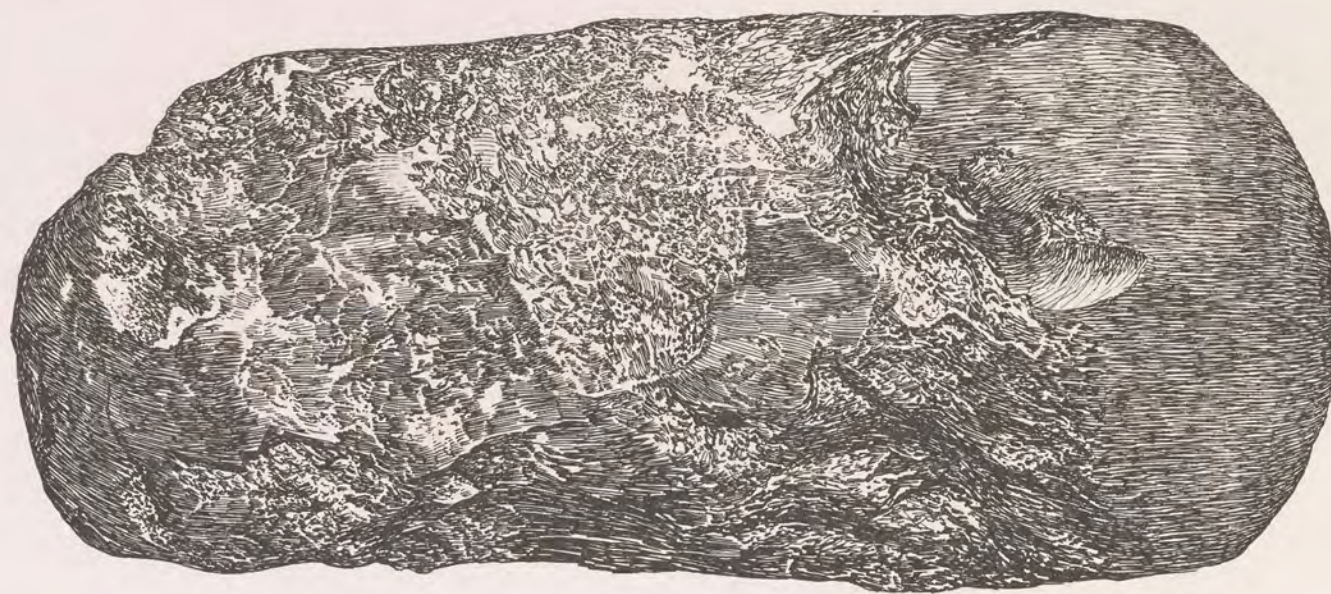
240

ABORIGINAL

AXE

ALASKA

Dimensions:  $7.12 \times 3.06 \times 1.47$  inches.  $18.1 \times 7.8 \times 3.7$  centimetres. Weight: 1 pound 14.920 ounces. 876.600 grammes  
 Specific gravity: 2.9813; hardness: 6.5. *Nephrite*  
 Color: Spinach-green



A very rough axe with an undefined cutting edge at each end. The piece is smooth in parts and was evidently separated from a larger mass by fracturing. It shows very little grinding, one of the cutting edges being simply an angle of the original mass or boulder which the aboriginal workman availed himself of to form an edge without much grinding. A broad longitudinal groove visible near one end

suggests that it was secured to a handle in such a way that a blow could be struck with either end. The piece is supposed to be of Tlinkit origin.

The material is translucent, homogeneous and compact, and is entirely filled with small fractures which indicate its tough, splintery character. It is permeated with minute spots of a rich green color.

241

ABORIGINAL

LARGE AXE (*Ud-lē-mau*)

CAPE PRINCE OF WALES, ALASKA

Dimensions:  $7.94 \times 2.75 \times 1.69$  inches.  $20.1 \times 7.0 \times 4.3$  centimetres. Weight: 2 pounds 11.060 ounces. 1220.755 grammes  
 Specific gravity: 2.9703; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with brown stainings, and some cloudings of black on one surface

A large heavy axe much thicker at one side than the other, and still showing that it was originally cut from a large rough, much-weathered block by sawing from two opposite faces and then fracturing the core with a blow. In this case the sawing was more complete than usual, and only a very thin unsawn part was left to be broken. The surface is very irregular and rough, especially on one face, the larger portion of which was untouched in the grinding process. The cutting edge, which is effective for general work, was ground from two

faces. Lieutenant Emmons, from whom it was obtained, says that when in use it was hafted with wood secured by stout thongs of hide.

The structure of the material is finely bedded parallel to the broader surfaces, with many flaws and occasional cracks parallel to the layers. The fracture is scaly. The black cloudings found on the rougher face are due to included black specks and dendritic growths of magnetite (?). Except for these, the material is very homogeneous.

242

ABORIGINAL

ROUGH AXE

CAPE PRINCE OF WALES, ALASKA

Dimensions:  $7.69 \times 2.91 \times 1.25$  inches.  $19.5 \times 7.4 \times 3.2$  centimetres. Weight: 1 pound 13.476 ounces. 835.650 grammes  
 Specific gravity: 2.9760; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with mottlings of black and stains of dead-oak-leaf

A very rough axe, in the manufacture of which little labor was expended, only a few of the more raised parts having received any grinding or sawing. The cutting edge, now much broken, is partly natural and partly the result of grinding. Lieutenant Emmons, from whom the specimen was obtained, says it was used only for heavy cutting, and had a wooden handle secured to it by stout thongs of rawhide.

The material shows a very irregularly bedded structure, with some flaws, mostly parallel to the bedding. The inclusions are chiefly black specks of what seems to be magnetite. Several cracks are stained with brown limonite (?).



243 ABORIGINAL

## PARTIALLY WROUGHT AXE

CAPE PRINCE OF WALES, ALASKA

Dimensions:  $5.72 \times 3.16 \times 1.84$  inches.  $14.5 \times 8.0 \times 4.7$  centimetres. Weight: 1 pound 14.889 ounces. 875.707 grammes  
 Specific gravity: 2.9758; hardness: 6.5. *Nephrite*  
 Color: Olive-green; weathered surface brown

A large rough weathered mass detached by partial sawing and a blow from a larger mass, and partially shaped into the form of an axe, the tool-marks being still visible on one face. The core between the two sawings is fully three quarters of an inch thick, and must have required a very severe blow to fracture it.

The material is translucent, very homogeneous and compact, the structure finely but irregularly bedded. The specimen has very evidently been split out along the bedding planes. The fracture is scaly and splintery. Minute brown stains are apparently the only inclusions.

244 ABORIGINAL

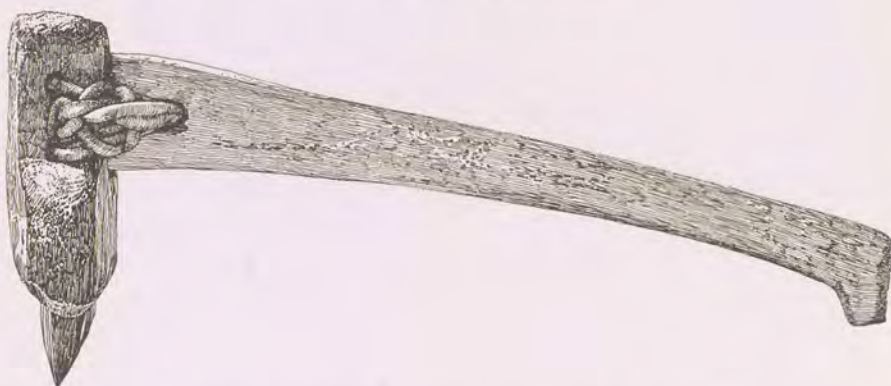
## ADZE

POINT BARROW, ALASKA

Dimensions:  $1.56 \times .88$  inches.  $4.0 \times 2.2$  centimetres. Weight: 1 pound 4.490 ounces. 580.880 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green

An adze inserted into a bone holder to which a bone handle has been lashed with stout thongs of rawhide. The cutting edge of the blade has been produced by grinding from two faces, and the head, which tapers somewhat from the upper edges of the ground faces, is set into a heavy bone socket. Lieutenant G. T. Emmons, from whom the specimen was obtained, explains that this is accomplished by placing the bone in boiling water and thus expanding it, then the blade is let in and the natural contraction resulting from cooling keeps it in place. Socketed in this and secured by thongs is a long bone handle, the thongs passing through two holes in the head and another in the handle, which is evidently modern. It is noticeable that the edges of the socket in the head are bevelled.

The material is translucent, homogeneous and compact, and the structure strongly schistose, showing only one deep crack in the plane of the bedding. The fracture is granular and uneven.



245 ABORIGINAL

ADZE (*Hoo-tar*)

ALASKA

Dimensions:  $3.34 \times 1.84 \times .75$  inches.  $8.5 \times 4.7 \times 1.9$  centimetres. Weight: 4.577 ounces. 129.761 grammes  
 Specific gravity: 2.9943; hardness: 6.5. *Nephrite*  
 Color: Spinach-green irregularly distributed through an indeterminate greenish-gray

A large adze with one flat and one bulging face and straight sides which gently slope upward from a slightly curved cutting edge to a somewhat narrower head, now much broken.

The material is nearly opaque, the lustre dull, and the structure distinctly bedded, the layers on the unworked surface being thin and curved, with smooth surfaces. There are numerous flaws, due to the

overlapping of these layers, and dark veins, which may be of a different nature from the mass, stand out slightly on the polished surface. Sparing inclusions, consisting of round black dots of what is probably magnetite, are also found.

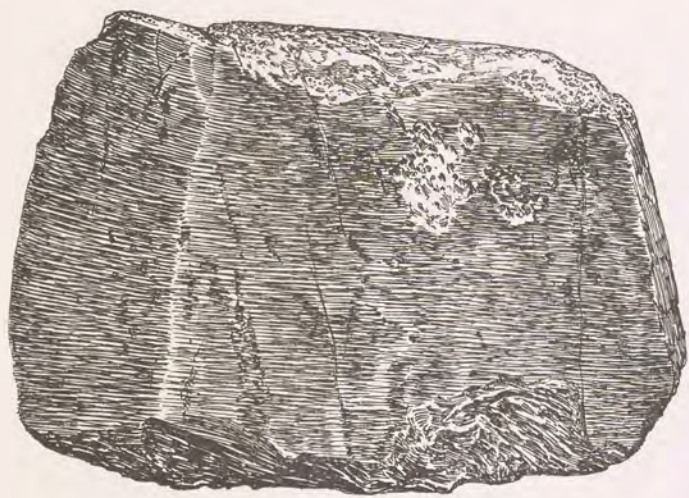
Collected by Lieutenant G. T. Emmons.

246 ABORIGINAL

## ADZE

ALASKA

Dimensions:  $3.78 \times 2.56 \times .72$  inches.  $9.6 \times 6.5 \times 1.8$  centimetres.  
 Weight: 8.584 ounces. 243.350 grammes  
 Specific gravity: 2.983; hardness: 6.5. *Nephrite*  
 Color: Spinach-green clouded and specked with dark brown; the weathered surface of dark dead-oak-leaf



A large adze which was evidently fractured out of a small boulder or block and ground flat on each face, one of which has been bevelled at the lower end to form a cutting edge, now much notched and broken in part. The oily character of the specimen and the brownish surface of the fractured faces where there is no polish would indicate that it had absorbed a certain amount of oil or grease while in use.

This is a typical specimen of Alaskan nephrite. It is translucent, is of a pale oily green by transmitted light, and is characterized by the presence in some profusion of crystals of a black mineral, evidently chromic iron.

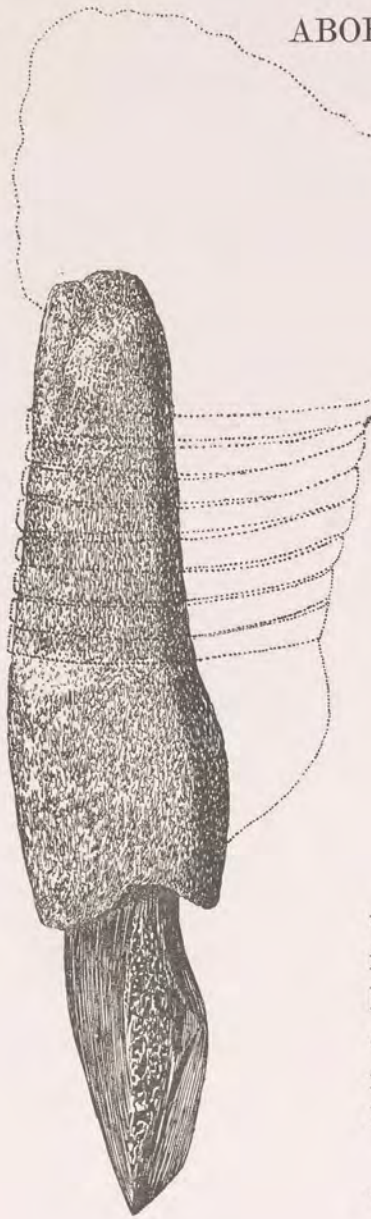


247

ABORIGINAL

ADZE (IN HOLDER)

ALASKA



Dimensions:  $2.94 \times 1.81 \times .62$  inches.  $7.5 \times 4.6 \times 1.6$  centimetres.  
 Weight: 2.936 ounces. 83.244 grammes  
 Specific gravity: 2.9762; hardness: 6.5. *Nephrite*  
 Color: Olive-green and brown with light yellowish stainings

An adze set in a roughly shaped walrus-bone handle and provided with a cutting edge produced by grinding down both faces. The piece from which it was fashioned was evidently separated from a larger mass by partially sawing the mass through with some firm substance, probably sandstone or quartzite (the straight parallel sawing-marks are still visible), and then severing the unsawn part with a blow. The upper end of the adze,

the part inserted into the handle, has a rough fractured surface, and differs in this respect from similarly mounted pieces found in the remains of the Swiss lake-dwellings, which have a pecked or hammer-roughened rounded surface. The Swiss lake-dwellers, however, used only rough deer-horn for handles, and not bone.

The material of this piece is compact and horny, and shows fractures parallel with the width of the adze.

It was procured at Fort Clarence on the Bering Sea coast of Alaska, from the Eskimo people of that vicinity, by Lieutenant G. T. Emmons in one of his expeditions (1890-95).

248

ABORIGINAL

ADZE

HOTHAM INLET, ALASKA

Dimensions:  $1.81 \times 1.0 \times .41$  inches.  $4.6 \times 2.5 \times 1.0$  centimetres. Weight: .626 ounce. 17.758 grammes  
 Specific gravity: 3.0017; hardness: 6.5. *Nephrite*  
 Color: Sea-green

A small adze almost flat on one face, but slightly bulging on the other. The cutting edge, which was originally straight, is now deeply notched; the sides are rough and taper to a narrow, somewhat broken head, which in ordinary circumstances would be wedged into a holder of bone or horn, and this in turn fastened to a handle like an axe or hammer. This is the oldest type of mounting, and is now rarely met with in Alaska.

The material is translucent, sea-green in color, but clouded in trans-

mitted light, with patches of a lively grass-green in a very pale green ground-mass. The structure is fibrous, the fibres being both parallel and curved. One large crack and many flaws are present, with sheeny, almost iridescent surfaces. The fracture is fibrous, showing occasionally a sparkling cleavage surface along one of the minute fibres.

Collected by Lieutenant G. T. Emmons.

249

ABORIGINAL

ADZE

CHATHAM ISLAND, ALASKA

Dimensions:  $2.09 \times 1.66 \times .38$  inches.  $5.3 \times 4.2 \times .9$  centimetres. Weight: 1.530 ounces. 43.486 grammes  
 Specific gravity: 2.9917; hardness: 6.5. *Nephrite*  
 Color: Spinach-green flecked with greenish-gray

A well-formed adze with wide straight cutting edge from which the sides slope regularly upward to a thin narrow head. All marks of the sawing process by which the piece was separated from the mass have been almost entirely obliterated by the grinding to which it was subjected in bringing it into shape. The fine marks of the abrasive used, probably a hard stone, are still visible on both faces. At

the extreme upper end the drilling of a perforation, probably intended for suspension of the piece, had been begun on both faces but never completed.

The material is translucent and very horn-like in structure. From the U. S. National Museum.



## 250 ABORIGINAL

ADZE (*Ud-lē-mau*)

KOTZEBUE SOUND, ALASKA

Dimensions:  $1.62 \times 1.56 \times .47$  inches.  $4.1 \times 4.0 \times 1.2$  centimetres. Weight: .8423 ounce. 23.8805 grammes  
 Specific gravity: 2.9844; hardness: 6.0. *Nephrite*  
 Color: Olive-green with a yellowish tint and greasy lustre

A small rough adze with a wide straight cutting edge from which the rough fractured sides slope rapidly to a small head. With the exception of the two ground facets of the cutting edge, the implement is rough and unpolished. It is probable that the piece was originally set in a bone or horn handle.

The material is translucent, and compact and homogeneous except for sparing black spots included in the mass. The bedding, which is shown chiefly by the cracks which traverse the specimen, is very obscure.

## 251 ABORIGINAL

ADZE (*Hoo-tar*)

SITKA, ALASKA

Dimensions:  $2.41 \times 1.34 \times .47$  inches.  $6.1 \times 3.4 \times 1.2$  centimetres. Weight: 1.477 ounces. 41.875 grammes  
 Specific gravity: 2.9568; hardness: 4.0-2.5. *Nephrite* (?)  
 Color: Sea-green on one side, gray and much altered on the other

A broken adze much altered by the action of heat or fire. Part of the back of the implement, including more than half of the cutting edge, has been broken off.

The structure of the material is bedded, the fracture is scaly, and there are occasional black inclusions. The green part is translucent,

the rest dull and opaque. The dull greenish-white part appears to be a hydrous alteration of nephrite and gives tests corresponding to talc. The hardness of the green part (4.0 in the Mohs scale) is also low and indicates incipient hydration.

Collected by Lieutenant G. T. Emmons.

## 252 ABORIGINAL

## ADZE

KOTZEBUE SOUND, ALASKA

Dimensions:  $2.5 \times 1.66 \times .78$  inches.  $6.3 \times 4.2 \times 2.0$  centimetres. Weight: 3.397 ounces. 96.307 grammes  
 Specific gravity: 2.9819; hardness: 6.5. *Nephrite*  
 Color: Grayish-green largely obscured by stainings of black and brown

A broken adze with flat sides which show that the piece out of which it was fashioned had been detached by sawing and fracture from a larger mass. The cutting edge has been much injured, and a large portion of the butt or head broken off. The flat face gives evidence of some arrested sawing operation, the nature of which is not clear.

The material is translucent, homogeneous and compact, and of coarsely bedded structure and splintery fracture. The black stainings which have penetrated the material along the cracks are evidently superficial, due to absorption of oil or fat.

## 253 ABORIGINAL

ADZE (*Ud-lē-mau*)

ALASKA

Dimensions:  $2.44 \times 1.66 \times .62$  inches.  $6.2 \times 4.2 \times 1.6$  centimetres. Weight: 2.3449 ounces. 66.4775 grammes  
 Specific gravity: 2.9870; hardness: 6.5. *Nephrite*  
 Color: Dark green mottled with a lighter green of indefinite hue

A rough adze with a wide cutting edge ground from two faces. The rest of the piece is entirely rough.

The material is distinctly bedded, and presents a smooth greasy

appearance on the surface of the layers. The darker areas which are visible seem to be due to abundant inclusions of a cloudy black substance the nature of which cannot be made out.

## 254 ABORIGINAL

## ADZE

KOTZEBUE SOUND, ALASKA

Dimensions:  $6.91 \times 1.91 \times 1.0$  inches.  $17.5 \times 4.8 \times 2.5$  centimetres. Weight: 8.119 ounces. 230.162 grammes  
 Specific gravity: 2.9805; hardness: 6.5. *Nephrite*  
 Color: Olive-green with many minute brown spots

A long narrow adze with straight cutting edge and pointed head. One side shows the natural roughness of the crude mass from which it was cut, with the prominences slightly worn down by use. The other shows the saw-marks and rough fractured core usually present in pieces which have been detached from a larger piece by partial sawing from two opposite faces and by a blow. The faces, one of

which is flat and the other slightly bulging, have been smoothed in part by grinding.

The material is almost opaque and the structure indeterminate. There are many flaws and one or two cracks, which do not, however, show any distinct parallelism. The inclusions consist of irregularly distributed brownish specks of limonite (?).



## 255 ABORIGINAL

## BROKEN ADZE

DIOMEDE ISLAND, ALASKA

Dimensions:  $2.12 \times 1.38 \times .44$  inches.  $5.4 \times 3.5 \times 1.1$  centimetres. Weight: 1.257 ounces. 35.640 grammes  
 Specific gravity: 2.9633; hardness: 6.5. *Nephrite*  
 Color: Dull spinach-green

A broken adze exhibiting on one face and part of the other the original fractured surface and the original weathering of the boulder or piece of material from which it was formed. On one face the saw-marks are well defined.

The material is compact, with a somewhat splintery fracture. The color is a dull spinach-green with darker veinings of crystals of chromic or magnetic iron.  
 From the U. S. National Museum.

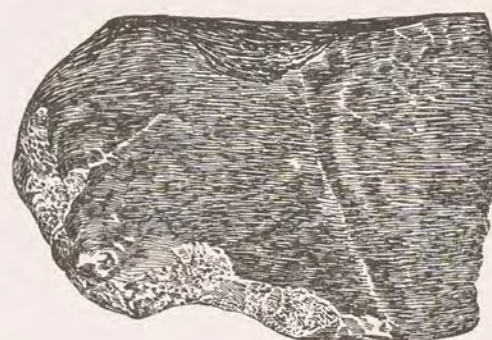
## 256 ABORIGINAL

## ADZE

ALASKA

Dimensions:  $2.69 \times 1.78 \times .72$  inches.  $6.8 \times 4.5 \times 1.8$  centimetres. Weight: 3.859 ounces. 109.415 grammes  
 Specific gravity: 3.0002; hardness: 6.5. *Nephrite*  
 Color: Ivy-green flecked with lighter green

An adze procured by Lieutenant G. T. Emmons from the Tlinkit people in one of his expeditions (1890-95). The upper half exhibits the original boulder roughness with dark worn markings left untouched in the process of smoothing the piece; the lower half terminates in a very sharp cutting edge (now much broken), produced by successive



grindings. By the people of this tribe it would be set in a wooden handle, not bone as in Eastern Siberia.

The material is subtranslucent and very compact on ground surfaces, but otherwise it exhibits the characteristic splintery structure of nephrite.

## 257 ABORIGINAL

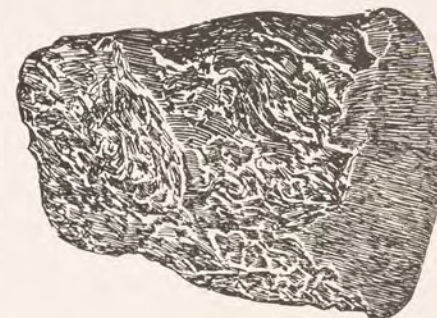
## HATCHET

ALASKA

Dimensions:  $2.34 \times 1.62 \times .59$  inches.  $5.9 \times 4.1 \times 1.5$  centimetres. Weight: 1.912 ounces. 54.214 grammes  
 Specific gravity: 2.9769; hardness: 6.5. *Nephrite*  
 Color: Olive-green

A hatchet from the Bering Sea coast of Alaska and supposed to be of Tlinkit origin. It has been very beautifully smoothed on one face, but on the other the smoothing extends very little above the ground edge, the rest of that face and the sides showing the fracture-marks and hammering by which it was separated from some water-worn boulder.

The material is translucent and homogeneous, showing very few inclusions of other minerals. It has a compact splintery structure which is very apparent on the ground surfaces.



## 258 ABORIGINAL

## HATCHET

KOTZEBUE SOUND, ALASKA

Dimensions:  $2.0 \times 1.97 \times .69$  inches.  $5.1 \times 5.0 \times 1.7$  centimetres. Weight: 2.264 ounces. 64.165 grammes  
 Specific gravity: 3.0176; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A thick hatchet with a wide, straight cutting edge from which the rough, unworked sides slope rapidly and unsymmetrically to a narrow, sharp head which also seems to have been ground down to a good cutting edge. The faces show seven different grinding-facets, yet many rough spots escaped polish in the grinding process.

The material is translucent and very compact and homogeneous. The bedding is indistinct. There are several deep flaws along which the color is much lighter. Fracture splintery.

## 259 ABORIGINAL

## FRAGMENT OF HATCHET

SLEDGE ISLAND, ALASKA

Dimensions:  $2.38 \times 1.34 \times .75$  inches.  $6.0 \times 3.4 \times 1.9$  centimetres. Weight: 2.142 ounces. 60.834 grammes  
 Specific gravity: 3.0039; hardness: 6.5. *Nephrite*  
 Color: Dull spinach-green

Fragment of a hatchet apparently broken by considerable violence. The surface has been almost entirely smoothed, but it is probable this is merely the result of the sawing by which the piece was severed from the mass, evidences of which can be seen in four places.

The material, which is fairly compact, broke with a rounded splintery fracture, the break being probably induced by a band of a foliated mineral, possibly marmolite, which runs almost entirely through the centre of the mass.



260 ABORIGINAL

CHISEL

ALASKA

Dimensions:  $1.38 \times .88 \times .44$  inches.  $3.5 \times 2.2 \times 1.1$  centimetres. Weight: .682 ounce. 19.329 grammes  
 Specific gravity: 3.0494; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A chisel with a good cutting edge at the lower end, produced by grinding. It has been smoothed all over, except at one corner and at the upper end, which has been left untouched and shows the original fracture-marks. It was obtained from the Tlinkits by Lieutenant G. T. Emmons (1890-95).  
 The material is compact, with splintery structure diagonally across the tool.



261 ABORIGINAL

VERY SMALL KNIFE

KOTZEBUE SOUND, ALASKA

Dimensions:  $.88 \times .41 \times .16$  inch.  $2.2 \times 1.0 \times .4$  centimetres. Weight: .054 ounce. 1.5146 grammes  
 Specific gravity: 3.013; hardness: 6.5. *Nephrite*  
 Color: Olive-green

A very tiny cutting-instrument which was probably used for engraving purposes, but is sharp enough for a lancet. The top is entirely rounded off, forming a little handle which may have been intended for insertion in a suitable holder. One face is rough and shows the original fracture; the other is more or less rounded. At one side, which is comparatively sharp, the piece was cut from opposite faces

before breaking the unsawn core, and the sawing-marks present a grooved appearance. The cutting edge was produced by grinding transversely from one face.

The material is translucent and very compact, and gives evidence on one rough surface of a very marked horn-like structure.

262 ABORIGINAL

SMALL KNIFE (*Clee-tar*)

ALASKA

Dimensions:  $1.53 \times .44 \times .19$  inches.  $3.9 \times 1.1 \times .5$  centimetres. Weight: .139 ounce. 3.9735 grammes  
 Specific gravity: 3.0221; hardness: 6.5. *Nephrite*  
 Color: Dark spinach-green

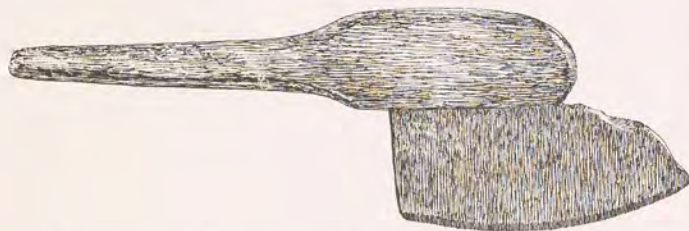
A small splinter, smoothed on only one face, and intended for use in wood-carving and the like. The material is translucent and homogeneous, and has a distinctly bedded structure, with some flaws roughly parallel to the bedding. Fracture scaly.

263 ABORIGINAL

KNIFE (*U-lú-ra*)

KOTZEBUE SOUND, ALASKA

Dimensions (including holder):  $2.5 \times 1.31 \times .12$  inches.  $6.3 \times 3.3 \times .3$  centimetres. Weight: 1.259 ounces. 35.685 grammes  
 Specific gravity: 2.9784; hardness: 6.5. *Nephrite*  
 Color: Mottled olive-green



A knife of the kind used by women for domestic purposes, such as cutting up fish, skins for clothing, etc., and called by the aborigines *U-lú-ra*, or "woman's knife." It consists of half of a larger knife with curved cutting edge, and is set in a horn handle in the manner of a butcher's cleaver. It is smoothed all over, and has a curved cutting edge formed by grinding from one face. Traces of the original saw-marks are still visible on both faces.

The material is translucent, but is clouded by many inclusions consisting of specks and flakes of yellow to brownish material, possibly limonite. The structure is apparently finely bedded, but is not well defined.

264 ABORIGINAL

KNIFE

KOTZEBUE SOUND, ALASKA

Dimensions:  $2.88 \times .44 \times .41$  inches.  $7.3 \times 1.1 \times 1.0$  centimetres. Weight: .6039 ounce. 17.1075 grammes  
 Specific gravity: 2.9744; hardness: 6.5. *Nephrite*  
 Color: Light spinach-green

A small chisel-like knife, with a thickish body of irregular section, showing at least six grinding-facets, and an oblique cutting edge at one end. Used as a graver for carving in bone, ivory, and wood.

The material is translucent and homogeneous, but shows several deep cracks and flaws along which the color is lighter. Scattered minute black inclusions are visible.



## 265 ABORIGINAL SMALL KNIFE CAPE PRINCE OF WALES, ALASKA

Dimensions: .84 × .69 × .19 inch. 2.1 × 1.7 × .5 centimetres. Weight: .107 ounce. 3.0335 grammes  
 Specific gravity: 2.9919; hardness: 6.5. *Nephrite*  
 Color: Very light sea-green

A small rough splinter to one end of which a sharp edge has been given by grinding from two faces. It was probably used as an engraver's or wood-carver's knife.

The material is very translucent and homogeneous, and free from inclusions. The structure is finely bedded, with many minute flaws parallel to the bedding. Fracture scaly.

266 ABORIGINAL KNIFE (*U-lú-ra*) CAPE PRINCE OF WALES, ALASKA

Dimensions: 5.25 × 2.38 × .19 inches. 13.3 × 6.0 × .5 centimetres. Weight: 3.028 ounces 85.830 grammes  
 Specific gravity: 2.9267; hardness: 6.5. *Nephrite*  
 Color: Some shade of green (probably sage) veined with black and obscured by superficial stainings of black and brown

A long thin-bladed knife set in a thick holder of wood and provided with a curved cutting edge formed by grinding from both faces. This is one of the kind of knives used by women for domestic purposes and called *U-lú-ra*, or "woman's knife," by the aborigines.

The material, which is translucent on thin edges, is traversed by many irregular cracks



along which is a deposit of cloudy-yellowish limonite (?), and dots and patches of the same are also included in the mass. The structure is not evident. The superficial stainings which obscure the natural color of the piece are, no doubt, due to the absorption of oils and fats in the course of use.

The knife described under No. 263 should be compared with this.

## 267 ABORIGINAL KNIFE CAPE PRINCE OF WALES, ALASKA

Dimensions: 2.19 × 1.69 × .31 inches. 5.5 × 4.3 × .8 centimetres. Weight: 1.551 ounces. 43.9605 grammes  
 Specific gravity: 2.9886; hardness: 6.5. *Nephrite*  
 Color: Dull spinach-green with dark-brown stainings

A thin flat knife with a cutting edge ground from both faces, and showing many fractured surfaces which have escaped the general polishing to which the piece seems to have been subjected. Probably used chiefly as a scraper or skin-dresser.

The structure of the material is very finely bedded, as is shown by

flaws and cracks parallel to the broad surface, by the scaly fracture on the unpolished portions, and by the minute agate-like banding of a portion of the polished end in bands of lighter and darker green. Except for these minute color variations, the material appears to be quite homogeneous. It is subtranslucent on the thinnest edges only.

## 268 ABORIGINAL KNIFE CAPE PRINCE OF WALES, ALASKA

Dimensions: 2.06 × 1.69 × .16 inches. 5.2 × 4.3 × .4 centimetres. Weight: .5419 ounce. 15.3645 grammes  
 Specific gravity: 2.9422; hardness: 6.5. *Nephrite*  
 Color: Dark olive-green, with three sharp, narrow bands of brown, and a superficial staining of brownish-black at one end

A knife in the form of a thin flat triangular slab, slightly curving on one side, and provided on that side with a cutting edge produced by grinding from both faces. One of the two remaining edges is rough, and one shows the saw-marks and the broken core left when it was detached from some larger slab.

The structure of the material is not shown, except by the brown bands, which are parallel and traverse the specimen from side to side at a high angle to the cut surfaces. They indicate a coarsely banded structure. The material is barely subtranslucent on the thin edge, and is compact and homogeneous, except for the color variations.



269 ABORIGINAL

## KNIFE-SHARPENER

ALASKA

Dimensions:  $2.75 \times .47 \times .16$  inches.  $7.0 \times 1.2 \times .4$  centimetres. Weight: .394 ounce. 11.160 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Dark and light green

A long finger-like piece of nephrite, tapering at one end, broader at the other, and polished all over except in certain depressed rough fractures which were not reached in the process of polishing. It was intended to be used as a knife-sharpener or whetstone, and in order that it might be at hand when needed a leather thong had been shrunk on the broad end for attachment to the belt or girdle. In prehistoric and aboriginal times the cutting edge of an implement was usually produced by grinding with sandstone or some other suitable stone, and the finer edge imparted to it by drawing it across

the jade sharpener. This accounts for the transverse lines found on most knife-sharpeners.

The material is homogeneous and compact. About one half of the piece is a very translucent light green, containing a few inclusions of a black metallic substance—probably chromite; the other half is a dark green, the larger part of which is absolutely opaque, the color being due to the presence of a black included mineral which is either chromite or magnetite.

270 ABORIGINAL

## KNIFE-SHARPENER

KOTZEBUE SOUND, ALASKA

Dimensions:  $3.5 \times .41 \times .31$  inches.  $8.9 \times 1.0 \times .8$  centimetres. Weight: .408 ounce. 11.5805 grammes  
 Specific gravity: 2.9866; hardness: 6.5. *Nephrite*  
 Color: Light olive-green with lighter mottlings

A relatively long, tapering piece of flattened round section, with a gradually deepening longitudinal furrow along the broader part, ending in two arms which are furrowed across the back apparently to facilitate the attachment of a cord or thong for suspensory purposes; intended to be used as a whetstone or hone in imparting a fine edge to a cutting-implement. The Indians of Alaska still use such sharpeners for their steel blades.

The material is translucent, homogeneous and compact, exhibiting a satiny sheen. The structure is finely bedded parallel to the length of the specimen. Incipient cracks are visible between the layers, producing a noticeable sheen on broader surfaces, and may be traced on the sides as fine lines of brownish stains. Fracture splintery.

271 ABORIGINAL

KNIFE-SHARPENER (*I-pik-sawn*)

ALASKA

Dimensions:  $4.97 \times .69 \times .31$  inches.  $12.6 \times 1.7 \times .8$  centimetres. Weight: 1.205 ounces. 34.1525 grammes  
 Specific gravity: 2.9806; hardness: 6.5. *Nephrite*  
 Color: Translucent sea-green clouded with olive-brown on one side

A long knife-sharpener with slightly convex faces and rounded sides tapering to the lower end, but wider in the middle than at the top or head. Near the butt-end there is a perforation drilled from both sides, through which a thong of leather has been rove for suspension from the belt.

This particular specimen was carried by the wife of the chief of the Selawik tribe of Eskimos. It was an heirloom and was greatly valued, though not in use. Lieutenant Emmons, from whom this specimen was obtained, says that before the introduction of steel blades slate was the material mostly used by the Eskimos for their knives,

but jade was also used. Jade was almost always the material of their sharpeners.

The material is translucent, with a beautiful silky lustre, and homogeneous except for an olive-brown area which merges insensibly into the main mass as though it were a slightly altered portion, and for a few inclusions consisting of black dots, possibly magnetite or chromite. The structure is somewhat fibrous and imperfectly bedded parallel to the broader surfaces of the specimen, as shown by incipient cracks along the edge and by the silky sheen caused by internal reflections from the surfaces of the cracks.

272 ABORIGINAL

## KNIFE-SHARPENER

KOTZEBUE SOUND, ALASKA

Dimensions:  $4.12 \times .41 \times .28$  inches.  $10.5 \times 1.0 \times .7$  centimetres. Weight: .456 ounce. 12.940 grammes  
 Specific gravity: 2.9960; hardness: 6.5. *Nephrite*  
 Color: Light translucent green

A knife-sharpener with a perforation near the butt drilled from both faces and intended to receive a thong for suspension from the belt. It is finely polished all over and is of horned crescent shape at the top.

The structure of the material is rather coarsely bedded parallel to

the broader surfaces, as shown by the numerous flaws and by the crack at one end. Internal reflections from these flaws produce a beautifully silky sheen which is in some cases highly iridescent. The material is very homogeneous, except for a few relatively large black dots and rods included in it, possibly magnetite or chromite.



## 273 ABORIGINAL

## SCRAPER (MOUNTED IN DECORATED HORN HANDLE)

ALASKA  
(NORTHWEST COAST)

Dimensions: 1.03 × .41 inches. 2.6 × 1.0 centimetres. Weight: 4.771 ounces. 135.264 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A scraper in a modern handle of reindeer-horn decorated with incised hunting and fishing scenes. Implements of this kind were used for dehairing, scraping, or softening skins.

The material, which is homogeneous and compact, is bedded parallel with the cutting edge and is broken off at each side. There are

veinings that are a trifle more yellow than the mass itself, and there is some staining which is evidently due to weathering and to the absorption of grease in the fractures. The nephrite is translucent on the edges.

## 274 ABORIGINAL

## SCRAPER (MOUNTED IN DECORATED HORN HANDLE)

ALASKA  
(NORTHWEST COAST)

Dimensions: 1.47 × .5 inches. 3.7 × 1.3 centimetres.  
 Weight: 5.537 ounces. 156.968 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A scraper mounted in a modern handle of reindeer-horn decorated with fishing and hunting scenes, and intended to be held in the right hand. The implement itself has been cut from a flat piece which has been sawn from a large mass, part of the original roughness being retained at the head to assist in securing it in the handle.

The material, which is translucent on the edge, is in color spinach-green with light-yellowish reflections evidently due to internal fractures, and is marked with occasional brownish-green spots due to inclusions of that color. The handle is quite unique and represents a wonderful amount of ingenuity in adapting it to fit the hand exactly and give the user every possible hold on so small a tool.

## 275 ABORIGINAL

## SCRAPER

CAPE PRINCE OF WALES, ALASKA

Dimensions (including holder): 2.32 × 1.34 × .41 inches. 5.6 × 3.4 × 1.0 centimetres. Weight: 6.846 ounces. 194.087 grammes  
 Specific gravity: 2.9858; hardness: 6.5. *Nephrite*  
 Color: Sage-green with superficial brown stainings in the fractured parts

A scraper or skin-dresser consisting of a blade of nephrite broken into shape, ground somewhat like an adze, and wedged into a horn holder which has been shaped to take the thumb and fingers of the right hand most conveniently when in use. Both faces of the blade have been polished all over except where there are several rough

depressed fractures which could not be reached in polishing. It is in them, as well as on the rough sides, that the brown superficial staining is found.

The material of the blade is translucent and very compact and homogeneous. The structure is finely but irregularly bedded.

## 276 ABORIGINAL

## PICK

POINT BARROW, ALASKA

Dimensions: 6.44 × 1.0 × .56 inches. 16.3 × 2.5 × 1.4 centimetres. Weight: 4.202 ounces. 119.230 grammes  
 Specific gravity: 2.9863; hardness: 6.5. *Nephrite*  
 Color: Sage-green interspersed throughout with black specks, with the exception of a patch of olive-brown at one end

A pick or root-digger, in the form of a long, somewhat flat-faced piece of nephrite with rounded sides which taper to a broad blunt point, and a head which, owing to a fracture, is narrower than it is an inch and a half lower down. The piece has been smoothed all over except in the case of a few pittings and cracks. An interrupted saw-mark is visible along one face. When in use this implement was provided with a bone or wooden handle in the manner of a pick.

The material is subtranslucent to opaque. The structure is not well indicated, but is probably coarsely bedded parallel to the narrow face, judging by the incipient cracks at one end. There are numerous inclusions consisting of needles, specks, and dendritic growths of a black material—probably magnetite—either scattered irregularly about, or gathered into shapeless patches which produce black mottlings and numerous slight unevennesses and protuberances.



277 MODERN

HARPOON-HEAD (*Ki-a-drun*) CAPE PRINCE OF WALES, ALASKA

Dimensions:  $2.69 \times 1.38 \times .12$  inches.  $6.8 \times 3.5 \times .3$  centimetres. Weight: 1.720 ounces. 48.767 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Mottled spinach-green

A harpoon-head consisting of a thin triangular blade of nephrite set in a short, somewhat pointed shank of walrus-bone and secured to it by pegs of bone which run through both the bone and the nephrite. The blade, an isosceles triangle in form, has been ground to a keen edge on the two equal sides, which curve slightly to the apex. The upper end of the shank has been bias-cut and excavated for a short distance to form the socket into which the shaft is fitted, hand-tight, when about to be used. A little above the blade is a hole by which the harpoon-head is made fast to a line of rawhide many fathoms in length, with a buoy or float attached to it. The mounting of the blade is modern and shows excellent workmanship.

Lieutenant Emmons, from whom the specimen was obtained, states that when the animal is struck the harpoon-head readily detaches itself from the shaft, which is immediately recovered by means of another line, and the line of rawhide and the float are thrown overboard. This serves to impede the movements of the wounded animal, and to mark its position. The shaft is usually from six to seven feet in length.

The material of the blade is translucent and presents a crystalline appearance due to reflections of light from many flaws. There are several black veins running through it, due to clouds of minute black inclusions. The structure of the material is not evident.

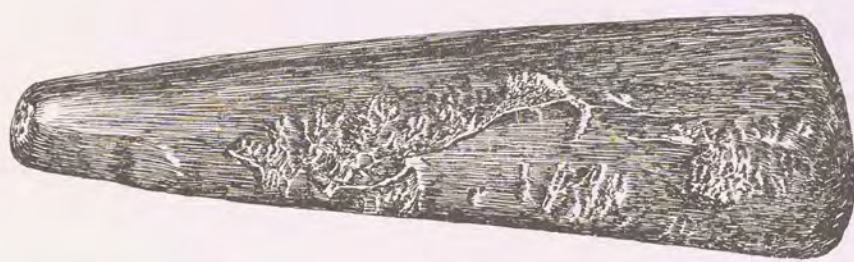
278 ABORIGINAL

## HAND-PESTLE

ALASKA  
(NORTHWEST COAST)

Dimensions:  $4.81 \times 1.47 \times .91$  inches.  $12.2 \times 3.7 \times 2.3$  centimetres. Weight: 5.090 ounces. 144.313 grammes  
 Specific gravity: 2.9730; hardness: 6.5. *Nephrite*  
 Color: Olive-green with very dark brown streaks and veinings, and a brown-black "skin" on the natural boulder surface

A hand-pestle of triangular cross-section, one rounded and highly polished side representing the natural surface of the boulder from which it had been sawn and fractured as shown on the other two sides; or it may be regarded as the remnant of a boulder from which many other pieces had been removed by sawing and breaking. It is wide and slightly rounded at the lower end, but tapers almost to a point at the upper. The curves at one end of the larger fractured core show that at least in that instance the sawing had been accomplished with the aid of a string or thong, or by a sharp bit of sandstone held in the hand.



The worn condition and high polish of the piece, and the complete obliteration of a sharp projection where sawn and broken, show that it has long been in use. The very dark color on the upper part is evidently due to staining with oils while in use. The lower end or base is entirely impregnated with particles of fine gold, showing that it had been used for grinding natural gold-dust, or sand containing gold-dust.

The material is subtranslucent and of compact texture. Brought from Alaska by Lieutenant G. T. Emmons, who secured the specimen on one of his expeditions between 1890 and 1895.

279 ABORIGINAL

## AXE

BERING SEA COAST OF SIBERIA

Dimensions:  $5.75 \times 2.5 \times .91$  inches.  $14.6 \times 6.3 \times 2.3$  centimetres. Weight: 1 pound .104 ounce. 456.550 grammes  
 Specific gravity: 2.9685; hardness: 6.5. *Nephrite*  
 Color: Olive-green passing into dark spinach-green with yellowish-brown stains

An axe sawn from a boulder and smoothed by grinding all over without obliterating either the sawing-marks, which are still seen on one side, or the fractured and weathered parts of the original mass. One side is longer than the other, giving the cutting edge the appearance of having been used more at one side than the other.

The material is of a schistose horny structure and shows a number

of seamy fractures parallel with the width of the axe, which are made more conspicuous by the brown staining due to the infiltration of grease or oil from the cutting of fish or animals.

Procured by Lieutenant G. T. Emmons from the Tchukchis, the reindeer people of the Bering Sea coast opposite Port Clarence, Alaska.

280 ABORIGINAL

## ADZE

BERING SEA COAST OF SIBERIA

Dimensions:  $2.25 \times 1.06 \times .59$  inches.  $5.7 \times 2.7 \times 1.5$  centimetres. Weight: 1.493 ounces. 42.333 grammes  
 Specific gravity: 2.9673; hardness: 6.5. *Nephrite*  
 Color: Mottled grayish-green and brown

An adze with a sharp cutting edge (now partly broken) produced by grinding from both faces. The fractured surfaces show that it was fashioned out of a piece separated from the outer portion of a water-worn boulder by two partial sawings at right angles to each other and then by breaking. The original weather-markings are visible from end to end as seen on one of the flat faces, and on the opposite face and one of the sides the original marks of the breaking are still visible except in so far as they have been obliterated by use.

The material is translucent and has a compact splintery structure which is well shown on the broken surfaces.

Under the microscope there is a faint suggestion of the patches derived from previous pyroxene, but the amphibole fibres are in a confused aggregation, with occasionally longer streaks of nearly parallel fibres.



## 281 ABORIGINAL

## HATCHET

NORTHEAST COAST OF ASIA OR NORTHWEST COAST OF AMERICA

Dimensions:  $5.31 \times 1.59 \times .84$  inches.  $13.5 \times 4.0 \times 2.1$  centimetres. Weight: 7.353 ounces. 218.447 grammes  
 Specific gravity: 3.0076; hardness: 6.5. *Nephrite*  
 Color: Mottled olive-green and brown

A long hatchet ground smooth on one face and on the lower part of the other, the greater part of the latter showing a large rough broken surface which seems to indicate that the material for the implement may have been cloven out of a boulder,—a little weathering still being visible,—and from the piece thus separated the hatchet was cut by partial sawing from two faces, and the central unsawn core broken by a blow, as may be seen by an examination of one of the sides.

The material is translucent, homogeneous and compact, bedded

parallel to the faces, and is seen by transmitted light to be of a pale olive-green color. It is remarkable for the absence of all visible inclusions. It has the characteristic splintery structure of nephrite, and is susceptible of a high polish. Under the microscope it is seen to be one of the class of rocks that have fibres somewhat large, and there are numerous cracks parallel to the direction of the fibrillation.

Dr. A. B. Meyer of Dresden, from whom the piece was obtained, says that this comes from a reliable Russian collection, and it is evidently a very rare old specimen.

## 282 ABORIGINAL

## CHISEL

EASTERN SIBERIA

Dimensions:  $3.5 \times .47 \times .47$  inches.  $8.9 \times 1.2 \times 1.2$  centimetres. Weight: .8974 ounce. 25.443 grammes  
 Specific gravity: 2.9668; hardness: 6.5. *Nephrite*  
 Color: Very dark olive-green and dark brown

A chisel of rounded pentagonal form and a short, dull cutting edge. A portion of the head has been broken off and the neck of the remaining piece notched as if for suspension, or it may be that the notches are the remains of a perforation which had been made in the original head for suspension or to assist, in conjunction with two notches a little lower down on one side, in fastening a handle to the piece. The object has been smoothed all over by grinding and use,

but is susceptible of a high polish. Saw-marks are visible on only one side.

The material is faintly translucent and both homogeneous and compact. The internal fractures run parallel with the length of the chisel. Some of them are black and may be due to the infiltration of oil or grease.

## 283 ABORIGINAL

## KNIFE

NORTHEAST COAST OF ASIA OR NORTHWEST COAST OF AMERICA

Dimensions:  $2.31 \times .81 \times .19$  inches.  $5.9 \times 2.1 \times .5$  centimetres. Weight: .435 ounce. 12.333 grammes  
 Specific gravity: 3.015; hardness: 6.5. *Nephrite*  
 Color: Very light olive-green

A knife pierced at the upper end for suspension. The cutting edge has been much worn away toward one side, which is consequently shorter than the other. The saw-marks on one side, and the saw-marks and rough broken surface on the other, show that it was severed at both sides from a larger mass. Except where fractured, the whole piece has been ground smooth by some abrasive. The drilling of the aperture was probably done, at least on one side, after the smoothing of the piece, and was accomplished by means of a sharp point projecting from a stone with a jagged edge, which came in contact with the object as the point wore away and marked it with a series of concentric scratches for a distance of twelve to eighteen millimetres from the opening.

The material is translucent, homogeneous and compact, with a characteristic splintery structure, bedded parallel to the faces. A distinct shimmer or sheen due to many internal fractures is visible on both faces.

Under the microscope it is seen to consist of fibres in parallel, sometimes curved, arrangement, with a laminated structure strongly marked, and accompanied by crooked cracks. The rock appears to have been crushed or dragged, and the structure indicates a high degree of dynamic metamorphism.

Dr. A. B. Meyer of Dresden, from whom this piece was obtained, states that this comes from a very reliable Russian collection.

## 284 ABORIGINAL

## BROAD AXE

NEW ZEALAND

Dimensions:  $5.41 \times 4.19 \times .81$  inches.  $13.7 \times 10.6 \times 2.1$  centimetres. Weight: 1 pound 3.690 ounces. 550.990 grammes  
 Specific gravity: 3.0273; hardness: 6.5. *Nephrite*  
 Color: Dark olive-green, almost black in parts, streaked and mottled with brown

A broad axe with convex faces, a crescent-shaped cutting edge, thin sides, and a narrow head, smoothed all over, leaving no traces of sawing or cutting.

The bedding of the material is almost parallel with the faces of the axe. Numerous traces of a black metallic substance, probably chromic iron, are visible.









From the same site



No. 289

**AXE**

Nephrite

New Caledonia

No. 296

**WAR-CLUB**

(*Meré*)

Nephrite

New Zealand

No. 286

**ADZE**

Nephrite

New Zealand







## 285 ABORIGINAL

## AXE

## NEW ZEALAND

Dimensions:  $7.62 \times 3.88 \times .59$  inches.  $19.4 \times 9.8 \times 1.5$  centimetres. Weight: 1 pound 6.132 ounces. 627.430 grammes  
 Specific gravity: 2.9838; hardness: 6.5. *Nephrite*  
 Color: Grayish-olive and pear-leaf-green

A very flat axe with one side longer than the other, thus giving the cutting edge the appearance of having been used more at one side than the other. It presents a number of ground faces, and still shows the fine marks of the abrasive used in grinding; several fractured and weathered spots, however, escaped the smoothing process.

The material is translucent on thin edges, and very fibrous and

horny in structure, breaking in large thin scales; and the texture is very even on laminae. By reflected light it shows a silky structure, and yet the material is as finely fibrous in one direction as a very compact fine-grained actinolite. It has a chatoyancy as beautiful as that of a greenish chrysoberyl cat's-eye. The implement is said to have been the property of a noted Maori chief of the North Island.

## 286 ABORIGINAL

## ADZE

## NEW ZEALAND

Dimensions:  $4.12 \times 2.16 \times .69$  inches.  $10.5 \times 5.5 \times 1.7$  centimetres. Weight: 6.781 ounces. 192.250 grammes  
 Specific gravity: 3.2663; hardness: 6.5. *Nephrite*  
 Color: Pear-leaf-green interspersed with lighter shades and some weathered spots

An adze made entirely by grinding from a rough piece of raw material probably not much larger than the finished implement, set in a cloven wooden holder the two parts of which are bound together by means of a two-braided cord of a fine wiry vegetable fibre, and provided with a handle set at an angle of about  $40^\circ$  to the axis of the adze itself, both holder and handle being of one piece of very hard and tough wood.

The material of the adze is subtranslucent, of a compact horny schistose structure, and shows inclusions of black grains of chromic

iron. The presence of perovskite probably accounts for the high specific gravity.

A study of thin sections under the microscope shows that the mineral consists of very minute fibres and particles with a banded structure, some being clouded, others transparent. There are small spots that are light green by incident light, and irregularly shaped crystals of a reddish-brown isotropic mineral surrounded by a white opaque substance which resembles leucoxene and is probably perovskite.

## 287 ABORIGINAL

## HATCHET

## NEW ZEALAND

Dimensions:  $2.69 \times 1.5 \times .5$  inches.  $6.8 \times 3.8 \times 1.3$  centimetres. Weight: 1.900 ounces. 53.8525 grammes  
 Specific gravity: 2.9649; hardness: 6.5. *Nephrite*  
 Color: Dead-oak-leaf on one side; on the other, a translucent light olive, with a dark gray mottled with very light brown spots

A small hatchet of regular outline with a crescent-shaped cutting edge from which the sides slope upward to a narrow curved head, evidently intended for insertion in a holder, and with one face slightly flatter than the other. It has been smoothed all over by grinding so

that hardly any trace is left of the sawing or fracturing by which it was detached from the large mass of which it formed a part. The faces are almost parallel with the bedding of the material.

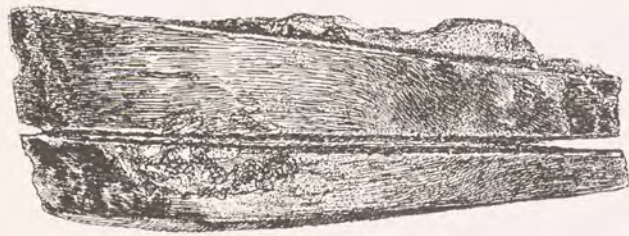
## 288 ABORIGINAL

## DIVIDED HATCHET

## NEW ZEALAND

Dimensions:  $3.41 \times 1.19 \times .47$  inches.  $8.6 \times 3.0 \times 1.2$  centimetres. Weight: 2.421 ounces. 68.624 grammes  
 Specific gravity: 3.0113; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

Two longitudinal sections of a hatchet which splendidly illustrate the methods used by the prehistoric lapidary in detaching one piece



of jade from another, viz.: by partially sawing through from each side or face with a slab of sandstone, grit-stone, or the like, and then fracturing the central unsawn part by a smart blow. Together they form two thirds (or perhaps one half) of a New Zealand hatchet which was divided

up in this way so that each section could be fashioned into a chisel or, perhaps, a pendant or ear-drop. Chapman, in his essay "On the Working of Greenstone," published in the "Transactions of the New Zealand Institute" (1891), makes mention of a broad axe which had been cut longitudinally down the centre to make two chisels of ordinary proportions.

The material is translucent, of a spinach-green color, with markings of a lighter green due to internal fractures or reflection of light on the foliation, the original piece having been cut with flat side parallel with the bedding. There are numerous minute inclusions of a black mineral which occurs in feathery or film-like aggregations.



289 ABORIGINAL

AXE

NEW CALEDONIA

Dimensions: 4.5 × 2.88 × .72 inches. 11.4 × 7.3 × 1.8 centimetres. Weight: 9.962 ounces. 282.440 grammes  
Specific gravity: 2.9311; hardness: 6.5. *Nephrite*  
Color: Brown of various shades

An axe with wide crescent-shaped cutting edge, convex faces, and thin sides sloping upward to a narrow thin head; smoothed all over by grinding except where the natural pittings and the original weathered surface of the boulder remain.

The material is opaque and has a compact structure permeated in all directions (but with a vertical tendency) by light-brown and almost white veinings, and a microstructure caused by a nearly uniform mixture of amphibole fibres, which are in fan-shaped divergent clusters sometimes approaching a spherulitic arrangement.

The chemical analysis by Walden, with reduction by Clarke, yielded the following results:

	AlNaSi <sub>2</sub> O <sub>6</sub>	FeR'Si <sub>2</sub> O <sub>6</sub>	Serpentine	Nephrite	
Silica . . . . .	52.60	3.40	1.62	4.92	42.66
Alumina . . . . .	1.45	1.45			
Ferric oxide . . . . .	2.10	1.08			
Ferrous oxide . . . . .	2.14			2.14	
Manganous oxide . . . . .	.10			.10	
Magnesia . . . . .	23.06		4.92	18.14	
Lime . . . . .	12.72			12.72	
Soda . . . . .	.93	.88			
Potash . . . . .	.57	.57			
Water . . . . .	3.62		1.48		
	99.29	5.73	3.32	11.32	75.76

Abstract	
Serpentine . . . . .	11.32
Nephrite . . . . .	75.76
AlNaSi <sub>2</sub> O <sub>6</sub> . . . . .	5.73
FeR'Si <sub>2</sub> O <sub>6</sub> . . . . .	3.32
	96.13
Ferric oxide . . . . .	1.02
Water . . . . .	2.14
	99.29

Silica in nephrite 0.05% too low.

Unaccounted for

290 ABORIGINAL

AXE

NEW GUINEA

Dimensions: 6.44 × 2.5 × 1.38 inches. 16.3 × 6.3 × 3.5 centimetres. Weight: 1 pound 3.714 ounces. 558.900 grammes  
Specific gravity: 2.99; hardness: 6.5. *Nephrite*  
Color: Dark green of uniform color

An axe of lengthened form, with convex sides tapering upward to a rough point and widening below to a sharp, crescent-shaped cutting edge, which is almost on a plane with one of the faces of the axe, the other face being more deeply ground down toward the edge. The surface is partially smoothed by grinding, leaving weathered hollows.

This axe and the hatchet, No. 291, which follows, were brought

from German New Guinea with a number of similar ones which had been collected by a German naturalist on the "Sattelberg" near Huon Gulf, together with other ethnographical specimens. He describes the implements as being still in use. The Collection is indebted to Dr. A. B. Meyer of Dresden for the contribution of these interesting specimens.

291 ABORIGINAL

HATCHET

NEW GUINEA

Dimensions: 4.0 × 2.12 × 1.0 inches. 10.2 × 5.4 × 2.5 centimetres. Weight: 6.977 ounces. 197.000 grammes  
Specific gravity: 2.94; hardness: 6.5. *Nephrite*  
Color: Pear-leaf-green with lighter veinings

A hatchet with convex sides tapering upward to an irregularly rounded point, where it shows marks of having been chipped into shape. The cutting edge, which is crescentic in outline, has been

formed by grinding down both faces of the hatchet. The faces are only partially smoothed, leaving marks of fracture and weathering. For Locality, etc., see No. 290.

292 PREHISTORIC

AXE (Fu)

CHINA

Dimensions: 8.16 × 2.38 × .72 inches. 21.7 × 6.0 × 1.8 centimetres. Weight: 15.9524 ounces. 452.2500 grammes  
Specific gravity: 3.0065; hardness: 6.5. *Nephrite*  
Color: Spinach-green flecked with light green

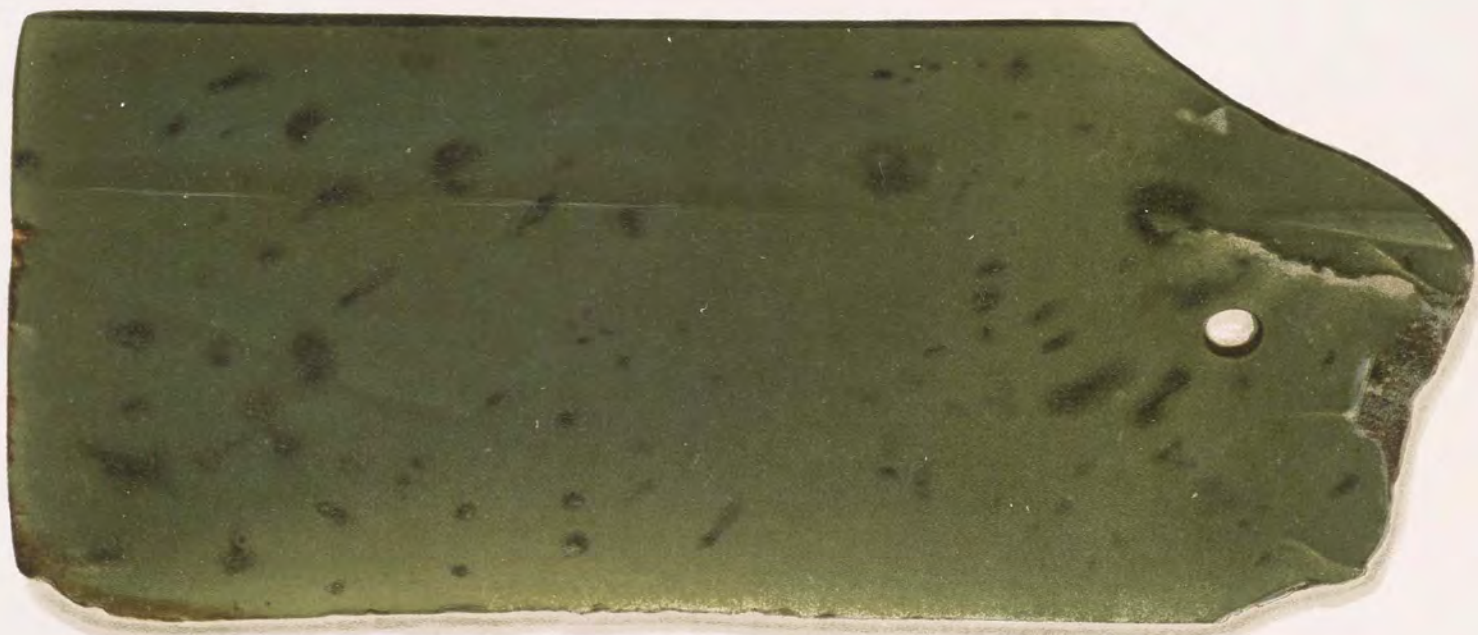
A long narrow axe with crescent-shaped cutting edge, slightly curved faces, and moderately thin edges which slope upward to a narrow head. It has been smoothed all over by grinding, and polished, except at the top, which still shows the irregularities of the original boulder. There is a break at one side which shows the structure to be bedded and splintery. The color is spinach-green flecked with lighter green, showing bright satiny reflections from the internal bedding and structure, and occasional dark spots of a darker form of the nephrite,

measuring from one to three millimetres across. There is a perforation near the top, but not quite in the axis of the piece, being distant from one side twenty millimetres, and from the other seventeen and one half millimetres. Its diameter on one face is eleven millimetres, and on the other only seven and one half millimetres, showing that it had been drilled from one face only, and that the borer had worn away more at the lower end as the drilling proceeded.











No. 324

**SMALL CELT**

*(Hsiao Chan)*

Previous to Han Dynasty

Nephrite

No. 322

**ORNAMENTED CELT**

*(Hua Chan)*

Previous to Han Dynasty

Nephrite

No. 293

**HATCHET**

*(Yao-chan)*

Previous to Han Dynasty

Nephrite

No. 294

**CLEAVER**

*(Ch'ai Tao)*

Previous to Han Dynasty

Nephrite







293 ANCIENT

HATCHET (*Yao-chan*)

CHINA

Dimensions:  $4.34 \times 2.5 \times .28$  inches.  $11.0 \times 6.3 \times .7$  centimetres. Weight: 4.163 ounces. 118.018 grammes  
 Specific gravity: 2.9664; hardness: 6.5. *Nephrite*  
 Color: Olive-green stained in parts with dead-oak-leaf and light brown

A flat hatchet, smoothed all over, with a straight cutting edge produced by equal grinding from both faces, and flat sides which approach somewhat toward a narrow head. One of the corners of the head or butt of the piece has been broken off by an irregular fracture where the nephrite is softened and stained by oxidation. Near the upper end is a large drilled hole measuring in diameter twenty-one millimetres on one side and only sixteen and one half on the other, the drill apparently having worn down before the perforation was complete. This was probably a secondary and later operation.

The material is very homogeneous and compact, but shows on the exterior many traces of brown oxidation and several opaque light-brown spots apparently of the same mineral, one internally visible by transmitted light.

These hatchets are often washed out of the ground after thunderstorms, and the Chinese, like most other nations, regard them as thunderbolts. Another notion among the Chinese is that they are "medicine-spades" left by divine herbalists of ancient times who had used them to dig up herbs, hence the name *yao-chan* (medicine-spades), by which they are known.

294 ANCIENT

CLEAVER (*Ch'ai Tao*)

CHINA

Dimensions:  $8.0 \times 3.97 \times .12$  inches.  $20.3 \times 10.1 \times .3$  centimetres. Weight: 6.151 ounces. 174.369 grammes  
 Specific gravity: 2.9834; hardness: 6.5. *Nephrite*  
 Color: Translucent sea-green, with moss-green patches and touches of dead-oak-leaf upon one end

A thin cleaver-shaped cutting-implement perforated near one end by drilling from one face only, either for suspension when not in use or to aid in securing the piece to a handle. The cutting edge (now much notched) is still very effective. It is probable that the piece was never any longer than it is now, as the rust-marks at the lower sharp-edged corner represent the original weathered surface of the boulder or block from which it was detached, probably by sawing entirely, some of the original saw-marks being still visible on each

face, and only partially obliterated by the grinding and polishing to which the piece was doubtless subjected.

The material is translucent and of very compact and homogeneous texture, as is indicated by the weather-marks when viewed by transmitted light. The dark spots resolve themselves, by transmitted light, into elongated translucent smoky masses of from one to five millimetres in length and one half to three millimetres in width, and are evidently inclusions of manganese or chromic iron.

## WEAPONS

295 ABORIGINAL

WEAPON (*Naschah*)

BRITISH COLUMBIA

Dimensions:  $10.88 \times 1.44 \times 1.0$  inches.  $27.6 \times 3.6 \times 2.5$  centimetres. Weight: 1 pound 2.996 ounces. 538.550 grammes  
 Specific gravity: 3.0170; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A weapon called *naschah*, or "killer," by the Chimsian Indians of British Columbia, and *katu* by those of Alaska. It was used chiefly on certain ceremonial occasions, as the erection of a new building, the death and burial of a chief, or the like. In the former instance the slaves who were to be sacrificed were brained with the *naschah* and their bodies deposited in the post-holes of the new building, and in the latter the slaves were brained and buried with the chief, so that when his spirit passed into the other world he would appear with a suitable number of attendants.

Along the centre of each of the broad faces of the weapon a ridge extends from end to end, thus giving the piece a six-sided appearance, the two faces tapering off to a four-sided angular point. About three inches from the butt-end is a groove used in fastening the weapon to a handle from eighteen to twenty-four inches long and set at right angles to it.

The material has a rich oily lustre, and is translucent and remarkably compact and hard. A few fractures visible through the dull polish show the tough splintery character of the nephrite. Near the pointed end, and running diagonally backward and downward, are several parallel double lines on each side that are of a lighter color and at first glance suggest an attempt at ornamentation. Minute black specks of what are evidently crystals of black chromic iron are visible through the piece.

This is a remarkably interesting specimen both archæologically and mineralogically. The Chimsian Indians, from whom this weapon was obtained by Dr. J. W. Powell, have their settlements along the Skeene River, British Columbia, and on the neighboring islands. With the Naskas they constitute the Chimesyan stock.



296

ABORIGINAL

WAR-CLUB (*Meré*)

NEW ZEALAND

Dimensions:  $17.81 \times 3.06 \times .47$  inches.  $45.2 \times 7.8 \times 1.5$  centimetres. Weight: 2 pounds 3.103 ounces. 995.190 grammes  
 Specific gravity: 3.0218; hardness: 6.5. *Nephrite*  
 Color: Dark ivy-green streaked in part with light shades of brown

A weapon of offence formerly used by the aborigines of New Zealand and called by them *meré*. In outline it greatly resembles a vertical section of an elongated "Indian club" rounded at the lower end, with slightly convex faces and thin edges. The gently bulging head is decorated with several roughly concentric furrows or grooves, and a little lower down is a perforation through which was passed the leathern thong by which the weapon was attached to the wrist when in use. The weapon has been finely smoothed all over.

The *meré* was the most famous weapon of the Maoris. In ancient times it was generally made of white whalebone, sometimes of wood, but for several centuries past some variety of *pounamu*, or "greenstone," has been used. Chapman, in his valuable paper "On the Working of Greenstone or Nephrite by the Maoris" ("Transactions of the New Zealand Institute," 1891), tells us that a greenstone *meré* was an object of great value. Many celebrated ones are mentioned, and the same writer says that on the sale of land by a native "a *meré* has often been handed over as symbolical of title." The weapon was not

used for a downward blow like an axe. The fighting was done chiefly with a sort of staff, and it was only when the combatants had come to close quarters and the enemy was pretty nearly vanquished that the *meré* was taken from the belt and fastened to the right hand. The left hand then grasped the hair of the enemy and the blow was struck at the side of the head, where the bones are weakest, and driven into the brain. Chapman (quoting Travers's "Life and Times of Te Rauparaha") mentions a *meré* with which a chieftain "killed two hundred and fifty prisoners of war at a single sitting, smashing the head of each with a single blow."

The material of this specimen is translucent by transmitted light and is emerald-green on thin edges. It is very compact and homogeneous and has a characteristic splintery fracture. The fracturing of the boulder from which it was taken runs parallel with the length of the weapon, and at the lower end some of the original weathering of the boulder may be seen.

297

ABORIGINAL

LARGE BATTLE-AXE

NEW CALEDONIA

Dimensions:  $9.06 \times 6.62 \times .44$  inches.  $23.0 \times 16.8 \times 1.1$  centimetres. Weight: 3 pounds 2.843 ounces. 1441.400 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green confusedly veined and mottled with lighter shades of green and with different shades of brown

A large battle-axe the blade of which is of rounded rectangular form with a sharp cutting edge all around, and perforated near one side with two holes through which are passed the cords which secure it to the cleft jaws of the handle and to the handle itself.

The material is translucent, homogeneous and compact, with a tough splintery fracture, the veining of the mineral running parallel with the flat faces of the axe-head, giving when polished a very twisted and mottled appearance.

The handle is very elaborately made and secured to the axe-head. Each jaw is tightly wound round with a reddish native twine, strengthened with firmly knotted loops of a fine wiry fibre, beginning at the top and proceeding downward as far as the jaws extend.

These last are then bound firmly to the blade by other cords which are passed many times through the holes on each side and tightly knotted. The rest of the handle is carefully bound round with several bandage-like folds of a native cloth of even texture, and wound round with cord in criss-cross fashion, the part nearest the blade being specially protected by many closely interwoven rounds of cording through which braided bands of twine and fibre are run and carried upward on each side of the jaws and through the holes to the corresponding points on the other side, where they are securely fastened. At the lower end is a large ornamental bunch of tassel-like knobs of bat's hair, as well as a loop for suspension. The weapon would certainly be a very formidable weapon in a hand-to-hand fight.

## CASTS FROM EUROPEAN MUSEUMS

A

CAST OF ROLLED PEBBLE

RIVER SANN, STYRIA

Dimensions:  $3.05 \times 1.84 \times .41$  inches.  $7.8 \times 4.7 \times 1.0$  centimetres. Weight: (not given)  
 Specific gravity: 2.93 (Frenzel); hardness: (not given). *Nephrite*  
 Color: Leek-green

A small thin rolled pebble said to have been found in the year 1880 among the rubble in the bed of the river Sann, near St. Peter, Cilli, Styria, and now in the Museum Johanneum in Gratz.

It is thin and flat, like an irregular flat hatchet, pointed at one end, and requires nothing but a cutting edge to make it an effective implement. It is paralleled as regards size and form by several pebbles from the jade-rivers of Eastern Turkistan, now in this Collection. "A splintery fracture," says Meyer, who examined the original, "is seen in some parts, and it shows boulder characteristics other than its boulder form." He describes it as of a leek-green color, and as very translucent on the edges, reminding him of some of the New Zealand nephrites.







No. 297

**BATTLE-AXE**

Nephrite

New Caledonia

No. 315

**NECK-ORNAMENT**

(*Heitiki*)

Nephrite

New Zealand















A  
ROLLED PEBBLE  
Nephrite  
River Sann, Styria

N  
SMALL THICK HATCHET  
Jadeite  
Dellach, Carinthia  
Austria

B  
ROLLED PEBBLE  
Nephrite  
Gratz, Styria

O  
CHISEL-SHAPED HATCHET  
Jadeite  
Mérida, Estremadura  
Spain

C  
FLAT HATCHET  
Jadeite  
Seeland, Denmark

CASTS OF PREHISTORIC OBJECTS IN EUROPEAN MUSEUMS











Arzruni's microscopical examination of a thin section revealed a microstructure similar to that of the Swiss lake-dwelling nephrites, but the fibres were more regularly parallel, longer, and hardly bent at all—in part, indeed, perfectly straight. Frenzel found the specific gravity to be 2.93, and an analysis made by him gave the following results:

Silica . . . . .	55.14
Magnesia . . . . .	22.92
Calcium . . . . .	13.12
Ferric oxide . . . . .	4.81
Manganous oxide . . . . .	trace
Water . . . . .	2.88
	<hr/> 98.87

## B

## CAST OF ROLLED PEBBLE

GRATZ, STYRIA

Dimensions:  $3.69 \times 2.03 \times 1.06$  inches.  $9.4 \times 5.2 \times 2.7$  centimetres. Weight: 8.207 ounces. 232.672 grammes  
Specific gravity: 3.00 (Frenzel), 3.023 (Szombathy); hardness: (not given). *Nephrite* (estimated by Szombathy)  
Color: Dark leek-green

A long thick rolled pebble found on April 23, 1875, in a heap of rubble at the entrance to Lazareth-gasse in Gratz, Styria. The original is now in the museum at Gratz.

The specimen presents the appearance of an adze that has been detached from a larger mass by partial sawing from two faces and by a blow, and lost before being fully fashioned and ground into shape, and the sharp edges worn away by river action. Still, Berwerth, Meyer, and others entitled to speak with authority are firmly of the opinion that it is only a natural water-worn pebble.

One of the two faces is curved longitudinally and bent toward the lower or cutting end in the manner of an adze, while the sides show, or seem to show, the sawing-marks, and the ridge representing the unsawn core not yet quite obliterated, though blunted by water-wearing. All that is needed is a cutting edge, and some roughening near the head, the better to hold it in a socket, to make it an effective tool.

Thin sections were examined microscopically by both Berwerth

and Arzruni, and they agree as to its being nephrite. Szombathy, with the aid of a hydrostatic balance, determined its specific gravity to be 3.023; while Frenzel, by means of a pycnometer, found it to be 3.00.

Two chemical analyses gave the following results:

Silica . . . . .	55.48	56.40
Magnesia . . . . .	22.55	21.70
Calcium . . . . .	12.88	12.42
Ferrous oxide . . . . .	6.27	5.75
Manganous oxide . . . . .	trace	trace
Alumina . . . . .	.31	.81
Water . . . . .	2.65	2.52
	<hr/> 100.14	<hr/> 99.60

This find, with the others made in the valley of the Mur, shows clearly that nephrite *in situ* must exist in the mountains in which the Mur has its source.

## C

## PREHISTORIC

## CAST OF FLAT HATCHET

SEELAND, DENMARK

Dimensions:  $9.28 \times 2.66 \times 1.03$  inches.  $23.6 \times 6.7 \times 2.6$  centimetres. Weight: 1 pound 11.171 ounces. 770.300 grammes  
Specific gravity: 3.269; hardness: (not given). *Jadeite*  
Color: Yellowish-green blue with orange-gray and grayish-green markings

A flat, relatively thick hatchet with one face slightly more curving than the other, a wide cutting edge, and two straight, flat, unsymmetrical sides which converge in a narrow blunt head and show strong boulder traces. The flatter of the two faces shows two grooves which may be secondary.

The original is in the Royal Museum at Cassel, Prussia. It is said

to have been sent thither from the island of Seeland, with other objects, by Landgrave Carl, a Hessian prince serving as field-marshal in the Danish army in the time of Struensee (1737-72). In form it greatly resembles the stone hatchets of other materials from the same island. (See Meyer, "Jadeit und Nephrit Objecte," Part II, p. 19. Leipzig, 1882.)

## D

## PREHISTORIC

## CAST OF LONG FLAT HATCHET

SEELAND, DENMARK

Dimensions:  $14.12 \times 3.31 \times .69$  inches.  $35.9 \times 8.4 \times 1.7$  centimetres. Weight: 1 pound 11.808 ounces. 788.350 grammes  
Specific gravity: 3.30; hardness: (not given). *Jadeite*  
Color: Greenish-gray with brownish and greenish markings

A long flat hatchet with wide sharp crescent-shaped cutting edge, flat faces, and thin sides which converge symmetrically to a pointed head, a small portion of which appears to have been broken off. One face shows a long groove which may be of secondary origin.

The original is in the Royal Museum at Cassel, Prussia. It is said to have been found in Seeland, Denmark, but Dr. Meyer of Dresden is inclined to regard it as of German origin.<sup>1</sup> Fischer suggested France.

<sup>1</sup> Meyer, Jadeit und Nephrit Objecte, Part II, p. 20. Leipzig, 1882.



## E PREHISTORIC

## CAST OF LARGE FLAT HATCHET

CLOPPENBURG, OLDENBURG

Dimensions:  $11.59 \times 3.81 \times 1.19$  inches.  $29.4 \times 9.7 \times 3.0$  centimetres. Weight: (not given)  
 Specific gravity: 3.43; hardness: (not given). *Chloromelanite*  
 Color: Grass-green

A long hatchet, somewhat thick, with very slightly curved, much chipped cutting edge, slightly rounded faces, and blunt sides tapering unsymmetrically to a pointed head.

The original is in the collection of the Historical and Antiquarian Society at Münster, Westphalia.

Another somewhat similar piece was found in the same locality and is now in the Grand Ducal Museum at Oldenburg.<sup>1</sup>

## F PREHISTORIC

## CAST OF SMALL FLAT HATCHET

ZMYSŁONA, POSEN, PRUSSIA

Dimensions:  $3.81 \times 1.50 \times .78$  inches.  $9.7 \times 3.8 \times 2.0$  centimetres. Weight: (not given)  
 Specific gravity: 3.424 (Milch); hardness: (not given). *Chloromelanite*  
 Color: Black

A small flat hatchet with slightly curved cutting edge, flat faces, and thick irregular sides which taper to a small blunt head. It was ground entirely into shape, but the cutting- and fracture-marks made in severing the piece from the original mass have not been entirely obliterated.

The original, which is now in the Grempler Collection in the museum at Breslau, was found together with a bronze celt and some earthenware in opening a new road between Reichthal, in the district of Ramslau, and Kempen, in the vicinity of Zmysłona, Posen, some time between 1870 and 1880.

## G PREHISTORIC

## CAST OF FLAT HATCHET

BONIFACIUS MOUNTAIN, NEAR HARRAS, MERSEBURG, PRUSSIA

Dimensions:  $8.75 \times 3.66 \times .75$  inches.  $22.2 \times 9.3 \times 1.9$  centimetres. Weight: (not given)  
 Specific gravity and hardness: (not given). *Jadeite (?)*  
 Color: Yellow-green gray

A flat hatchet with blunt, curved cutting edge and blunt sides which taper upward to a pointed head. One face is longitudinally bowed or convex and the other correspondingly concave, giving the object a bent appearance. When the object rests on the convex side the head is two centimetres above the point of contact with the table.

The original, which is now in the Historical and Antiquarian Col-

lection at Erfurt, was found in 1830, near Erfurt, on the Bonifacius Mountain, at the so-called "Schanze," or redoubt, on the peak of the mountain, near Harras, beyond Beichlingen. A similar specimen found in the same place is now in the castle at Beichlingen. (See Meyer, "Jadeit und Nephrit Objecte," Part II, p. 22. Leipzig, 1882.)

## H PREHISTORIC

## CAST OF LONG FLAT HATCHET

PFALZKYLL FARM, NEAR TREVES

Dimensions:  $9.94 \times 2.59 \times .75$  inches.  $25.2 \times 6.6 \times 1.9$  centimetres. Weight: 1 pound 2.586 ounces. 526.900 grammes  
 Specific gravity: 3.40 (Frenzel); hardness: (not given). *Chloromelanite*  
 Color: Blue-green, translucent grass-green at edge, with light-green streaks and spots

A long narrow flat hatchet with curved cutting edge more ground away on one side than on the other, slightly curving faces, and blunt sides which taper unsymmetrically to a pointed head.

The original is in the Provincial Museum at Treves.

<sup>1</sup>Meyer, Jadeit und Nephrit Objecte, Part II, p. 20. Leipzig, 1882.







G

FLAT HATCHET

Jadeite

Bonifacius Mountain

Merseburg, Prussia

L

FLAT HATCHET

Jadeite

Münchpiffen, Saxe-Weimar

Germany

D

LONG FLAT HATCHET

Jadeite

Seeland, Denmark

K

LONG FLAT HATCHET

Jadeite

Höxter, Westphalia

Germany

J

FLAT HATCHET

Jadeite

Warburg, Westphalia

Germany

CASTS OF PREHISTORIC IMPLEMENTS IN EUROPEAN MUSEUMS





*John R. Allen*















M  
LONG FLAT HATCHET

Jadeite  
Münchpiffen, Saxe-Weimar  
Germany

I  
LONG THICK HATCHET

Jadeite  
Saarburg, Treves  
Germany

E  
LARGE FLAT HATCHET

Chloromelanite  
Cloppenburg, Oldenburg  
Germany

F  
SMALL FLAT HATCHET

Chloromelanite  
Zmyslona, Posen  
Prussia

H  
LONG FLAT HATCHET

Chloromelanite  
Pfalzkyll Farm, near Treves  
Germany

CASTS OF PREHISTORIC IMPLEMENTS IN EUROPEAN MUSEUMS







## I PREHISTORIC

## CAST OF LONG THICK HATCHET

SAARBURG, TREVES

Dimensions:  $9.53 \times 2.69 \times 1.19$  inches.  $24.2 \times 6.8 \times 3.0$  centimetres. Weight: 1 pound 6.878 ounces. 648.600 grammes  
 Specific gravity: 3.41; hardness: (not given). *Jadeite* (?)  
 Color: Olive-green with yellowish-brown and dark-brown spots

A long narrow, relatively thick, unsymmetrical hatchet with broken curved cutting edge and rounded sides, one longer than the other, tapering to a pointed head, and showing several boulder characteristics which have not been removed in the grinding. As the material is undoubtedly a mixture (says Meyer<sup>1</sup>), a small piece (weighing 0.353 gramme) of the pure green part was removed for examination by Frenzel, with the following results:

Specific gravity . . . . .	3.30
Silica . . . . .	56.14
Alumina . . . . .	23.36
Ferrous oxide . . . . .	3.07
Calcium . . . . .	2.63
Water . . . . .	.58
Soda, not taken owing to insufficiency of material	
Magnesia, not taken owing to insufficiency of material	

The original is in the Provincial Museum at Trier, Germany.

## J PREHISTORIC

## CAST OF FLAT HATCHET

WARBURG, WESTPHALIA

Dimensions:  $7.97 \times 3.78 \times .75$  inches.  $20.2 \times 9.6 \times 1.9$  centimetres. Weight: 13.388 ounces. 379.550 grammes  
 Specific gravity: 3.35; hardness: (not given). *Jadeite*  
 Color: Yellowish-green gray with brown veinings

A flat hatchet with wide, moderately curved cutting edge, now much broken and ground away more at one side than the other, slightly curving faces, and a longer and a shorter side which taper unsymmetrically to a pointed head, now slightly broken. The sides are almost as sharp as the edge.<sup>2</sup>

The original, which was found in 1881, at Borgholz, in the district of Warburg, on the left bank of the Weser, is now in the museum at Münster.

## K PREHISTORIC

## CAST OF LONG FLAT HATCHET

HÖXTER, WESTPHALIA

Dimensions:  $9.84 \times 3.00 \times .50$  inches.  $25.0 \times 7.6 \times 1.3$  centimetres. Weight: (not given)  
 Specific gravity: 3.26; hardness: (not given). *Jadeite*  
 Color: Greenish-gray with brown veinings

A long narrow flat hatchet with curved cutting edge, flattish faces, and thin sides which taper gradually to a pointed head.

The original, which is in the collection of the Westphalian Historical and Antiquarian Society at Münster, was found in 1831 near

the Wehrden Chapel, Höxter, three feet below the surface. It had been damaged, a triangular piece having been broken out at one side about six and one half centimetres from the lower end, and the hatchet broken in two.<sup>3</sup>

## L PREHISTORIC

## CAST OF FLAT HATCHET

MÜNCHPFIFFEN, SAXE-WEIMAR

Dimensions:  $9.03 \times 4.38 \times .78$  inches.  $22.9 \times 11.1 \times 2.0$  centimetres. Weight: 1 pound 7.534 ounces. 667.200 grammes  
 Specific gravity: 3.44; hardness: (not given). *Jadeite* (?)  
 Color: Greenish-gray with grass-green and yellowish-brown veinings

A thin flat hatchet with wide curved cutting edge, slightly convex faces, and thin sides which converge not quite symmetrically in a pointed head ground smooth all over and showing no signs of sawing or fracturing. The specific gravity is high enough for chloromelanite, but the color is too light, and it is probable that the material is jadeite with an admixture of some other mineral.<sup>4</sup>

The original, which has not been analyzed chemically, is in the Ethnological Museum at Leipzig. Dr. Obst, the curator, remarks that the colors of this and of the specimen numbered M have been well reproduced in the illustrations here given.

<sup>1</sup> Jadeit und Nephrit Objecte, Part II, p. 23. Leipzig, 1882.

<sup>2</sup> *Ibid.*, p. 21.

<sup>3</sup> *Ibid.*, p. 21.

<sup>4</sup> *Ibid.*, p. 22.



## M PREHISTORIC

## CAST OF LONG FLAT HATCHET

MÜNCHPFIFFEN, NEAR ALLSTEDT, SAXE-WEIMAR

Dimensions:  $9.94 \times 3.06 \times .69$  inches.  $25.2 \times 7.8 \times 1.7$  centimetres. Weight: 15.982 ounces. 453.100 grammes  
 Specific gravity: 3.38; hardness: (not given). *Jadeite*  
 Color: Grass-green with mottlings of dark green and yellowish-brown

A long flat hatchet with slightly curving faces, increasing in thickness toward the centre, a sharp, moderately curved cutting edge, and thin sides which taper gracefully but not quite symmetrically to a pointed head. It has been entirely ground into shape. The material gives evidence of the presence of a red mineral, which may account for its high specific gravity.<sup>1</sup>

The original is in the Ethnological Museum in Leipzig.

## N PREHISTORIC

## CAST OF SMALL THICK HATCHET

DELLACH, CARINTHIA, AUSTRIA

Dimensions:  $2.75 \times 1.53 \times .78$  inches.  $7.0 \times 3.9 \times 2.0$  centimetres. Weight: (not given)  
 Specific gravity: 3.34; hardness: (not given). *Jadeite*  
 Color: Grass-green changing to bluish-green with many grayish, yellowish, and dirty-brown inclusions and striae

A short thick hatchet with crescent-shaped cutting edge ground from both faces, and thick rounded sides tapering to a small rounded head. It has been ground all over and shows no traces of cutting or pecking.

The original, now in the collection of Prince Windischgrätz in Vienna, was found in 1871 at Gurina, a farm on the slope of the hill above Dellach, southeast of Lienz, Carinthia, where many ancient objects have been found.

## O PREHISTORIC

## CAST OF CHISEL-SHAPED HATCHET

MÉRIDA, ESTREMADURA, SPAIN

Dimensions:  $8.00 \times 2.31 \times 1.0$  inches.  $20.3 \times 5.9 \times 2.5$  centimetres. Weight: (not given)  
 Specific gravity: 3.37; hardness: (not given). *Jadeite*  
 Color: Grass-green with whitish and yellowish veinings

A long chisel-shaped hatchet with sharp spreading cutting edge, narrow flattened faces, and rounded sides which converge symmetrically toward a narrow thick head which shows boulder traces. It has been finely smoothed all over by grinding, and is perforated near the head in a slightly slanting direction, apparently from one face only, as the aperture on one face is much smaller and nearer the end than on the other.

The original is in Dresden. It was found on a mountain-side near Mérida, and Fischer was inclined to assume that it had been brought

thither from Mexico, as no perforated hatchets had been found in Europe up to that time, and no jadeite implements had been found in Spain. Dr. Meyer points out, however, that Mérida was a Roman colony and that other jadeite hatchets, also perforated, have since been found in Spain.<sup>2</sup> M. Emil Cartailhac, who was engaged in anthropological research in Spain and Portugal in 1880 and 1881, refers to this object, and is of the opinion that it is not European, stating that he does not find a single jade implement in either of these countries.<sup>3</sup>

## P PREHISTORIC

## CAST OF LONG THICK HATCHET

MEXICO (?)

Dimensions:  $14.69 \times 4.0 \times 1.75$  inches.  $37.3 \times 10.2 \times 4.4$  centimetres. Weight: 6 pounds 12.903 ounces. 3087.400 grammes  
 Specific gravity: 3.26; hardness: (not given). *Jadeite*  
 Color: Greenish-gray with bluish hue, and grass-green with brown and blackish veins

A long thick hatchet with crescent-shaped cutting edge, and thick rounded sides which converge at the top into a narrow head or butt. It has been entirely ground into shape and shows no marks of sawing or hammering. Its finding-place is unknown, but Dr. A. B.

Meyer of Dresden is convinced that it is of Mexican origin, "as all celts coming from Mexico are of similar shape."<sup>4</sup> It is perfectly polished, and, as Meyer remarks, may have been an ornamental or a sacrificial celt.

<sup>1</sup> Meyer, *Jadeit und Nephrit Objecte*, Part II, p. 22. Leipzig, 1882.

<sup>2</sup> *Ibid.*, p. 18.

<sup>3</sup> *Les Âges Préhistorique de l'Espagne et du Portugal*. Paris, 1886.

<sup>4</sup> Meyer, *Jadeit und Nephrit Objecte*, Part II, p. 1. Leipzig, 1882.







S  
SMALL FIGURE  
Jadeite  
Probably Mexico

Q  
LONG FLAT HATCHET  
Nephrite  
New Zealand (?)

P  
LONG THICK HATCHET  
Jadeite  
Mexico (?)

R  
SMALL THICK HATCHET  
Jadeite  
New Guinea

CASTS OF PREHISTORIC OBJECTS IN EUROPEAN MUSEUMS











Q ABORIGINAL CAST OF LONG FLAT HATCHET NEW ZEALAND (?)

Dimensions: 13.78 × 3.94 × .84 inches. 35.0 × 10.0 × 2.1 centimetres. Weight: 2 pounds 14.085 ounces. 1306.500 grammes  
Specific gravity: 2.95; hardness: (not given). *Nephrite*  
Color: Grass-green and yellowish-green in different shades

A long hatchet with very flat faces and a wide, moderately curved cutting edge from which the sides slope upward to a much narrower, somewhat thin, and fractured head. The sides furnish a good example of the method in use in prehistoric times for detaching from a larger mass the material required for an implement, viz.: by sawing from both faces, and in this case at both sides, and then breaking the un-sawn core by a blow. The straightness of the sawing-marks seems to show that the implement used in the sawing must have been a flat

rigid body—*e. g.*, a thin slab of sandstone or a metallic plate. The metals, however, were not known in New Zealand before the arrival of foreigners in the second half of the eighteenth century.

The original is in the Leipzig Museum, and is considered by Dr. Obst, the curator, to be of New Zealand origin. Dr. A. B. Meyer of Dresden, on the other hand, is inclined to class it with the New Caledonian hatchets.<sup>1</sup>

R ABORIGINAL CAST OF SMALL THICK HATCHET NEW GUINEA

Dimensions: 2.72 × 1.34 × .75 inches. 6.9 × 3.4 × 1.9 centimetres. Weight: 2.648 ounces. 75.050 grammes  
Specific gravity: 3.16; hardness: (not given). *Jadeite* (?)  
Color: Yellowish-green gray

A small thick hatchet with slightly curved cutting edge ground from both faces, blunt rounded sides, and a tapering round head. The original, which is in the Dresden Museum, is set in a piece of wood to a depth of about twenty-five millimetres, and this in turn is inserted at a nearly right angle in a handle thirty-seven centimetres in length. The wood plainly shows that it had been fashioned with a stone implement, and not one of iron. It was brought from Humboldt's Bay, on the northeast coast of New Guinea, by the Dutch expedition of 1858.

As the specific gravity was high for nephrite and low for jadeite, an analysis was made by Frenzel with the following results:

Silica . . . . .	56.80
Alumina . . . . .	16.25
Soda . . . . .	12.06
Iron protoxide . . . . .	7.63
Manganous protoxide . . . . .	trace
Magnesia . . . . .	3.13
Lime . . . . .	5.60
Water . . . . .	.25
	101.72

Meyer concludes from this that it is a chloromelanite with a low, almost nephritic, specific gravity.<sup>2</sup>

S PREHISTORIC CAST OF SMALL FIGURE PROBABLY MEXICO

Dimensions: 9.84 × 3.72 inches. 25.0 × 9.5 centimetres. Weight: 2 pounds 4.342 ounces. 1130.300 grammes  
Specific gravity: 3.354; hardness: (not given). *Jadeite*  
Color: Translucent bluish-green

A standing figure of a human being, apparently a man beyond middle age, with artificially deformed head, prominent ear-lobes pierced for the suspension of some ornament, and short arms apparently so bent at the elbows as to show the hands, each with five extended fingers, against the upper arm. The nose is short and rather flat, and has the nostrils pierced. A hole just back of and below the ears, and extending from side to side, shows that it was intended for suspension. One leg has been broken.

The origin and purpose of the figure are not known. It may have been an idol, or, like the *heitiki* of the aboriginal New Zealander, it

may have been used simply as a souvenir or remembrancer of some dead ancestor.

The original is now in the Imperial Museum of Natural History at Vienna, having been purchased from Dr. Gustav von Jurié, who in a letter to the writer states that the figure, together with a cross of jade, came into the possession of his uncle, a Mr. Rigl, many years ago, but how it came into his possession, or where it came from, he could not tell. It was always thought by the family to be a Mexican idol.

T PREHISTORIC CAST OF LEYDEN PLATE CENTRAL AMERICA

Dimensions: 8.53 × 3.41 × .41 inches. 21.6 × 8.6 × 1.0 centimetres  
Specific gravity: 3.31; hardness: 7.0. *Jadeite*  
Color: Green, interrupted here and there by flakes of bluish hue

A flat ceremonial celt of oblong form, widening below, with rounded corners, perforated for suspension in two places in the median line near the upper and lower rims. There is a slight bevel in both sur-

faces from the edges toward the axis, indicating the old method of sawing.

The celt was discovered by S. A. van Braam, a Dutch civil engi-

<sup>1</sup> Meyer, *Jadeit und Nephrit Objecte*, Part III, p. 54. Leipzig, 1883.

<sup>2</sup> *Ibid.*, p. 51.



neer, while opening a trench toward the Graziosa River, in St. Felipe, on the frontiers of Honduras and Guatemala, and was presented by him to the Leyden Museum. A report of it was read at a meeting of the Congrès International des Américainistes, in 1877, and published in the "Comptes Rendus," tome II, p. 283.

It is engraved on one side with the representation of a chieftain sacrificing, with a flaming censer in one hand and a human head in the other, trampling under his feet the body of a conquered enemy. On the other side there is engraved a vertical line of hieroglyphic

characters in the ancient Mayan script, which has not yet been thoroughly deciphered.

The original is in the museum at Leyden, Holland. The cast was presented to the collection by Mrs. Zelia Nuttall.

For further particulars refer to an article by Philip J. J. Valentini, Ph. D., on "Two Mexican Chalchihuites: the Humboldt Celt and the Leyden Plate," published in the "Proceedings of the American Antiquarian Society," New Series, Vol. I. Worcester, Massachusetts, 1881.

## U PREHISTORIC

## CAST OF HUMBOLDT CELT

## MEXICO

Dimensions:  $8.53 \times 3.41 \times 1.31$  inches.  $21.6 \times 8.6 \times 3.4$  centimetres. Weight: (not given)  
Specific gravity: 3.31; hardness: 7.0. *Jadeite*  
Color: Green, interrupted here and there by flakes of bluish hue

A ceremonial celt shaped in the form of an axe with rounded convex sides, and having a piece broken off at the top.

The original celt was presented to Alexander von Humboldt in Mexico, in the year 1804, by Professor Del Rio, and deposited by the former in the Royal Museum at Berlin without commenting upon it. It was first illustrated by Lord Kingsborough in the fifth volume of his magnificent work on the "Antiquities of Mexico" (9 vols., London, 1831-48). In 1875, Professor H. Fischer "succeeded in rediscovering

the precious and forgotten celt on the dusty shelves of the Berlin Museum," and illustrated it again, half size, in his book (Fig. 36), describing it as a "splendid Aztec axe of jadeite, Sp. Gr. 3.31, inscribed with hieroglyphs, now exhibited in the Ethnological Department of the Berlin Museum."

For further particulars refer to Dr. Valentini's article on "Two Mexican Chalchihuites," quoted above in the description of Cast T.

## PARTIALLY WORKED PIECES

## 298 VERY ANCIENT

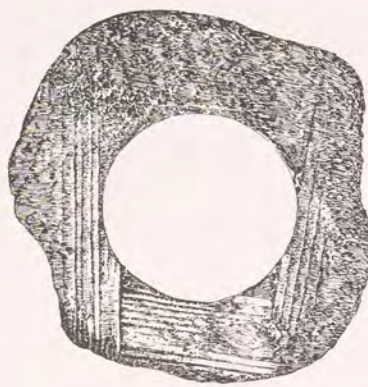
## WORKED FRAGMENT

## GUATEMALA

Dimensions:  $3.25 \times 3.16 \times .56$  inches.  $8.2 \times 8.0 \times 1.4$  centimetres. Weight: 3.094 ounces. 87.724 grammes  
Specific gravity: 3.2360; hardness: 7.0. *Jadeite*  
Color: A mottling of light green and gray, encrusted with mixtures of gray, brown, and green

A fragment in the form of an irregular, broken-edged, four-sided slab from the centre of which a circular piece had been cut, apparently by a hollow cylindrical drill, leaving an aperture measuring on the upper or rough side one and five eighths inches in diameter, and on the under side one and a half inches. The slab itself appears to have been originally part of a weather-worn mass or boulder from which it had been detached by six distinct cuttings, each of which has left large straight ridges on the under side. A careful study of these cuttings seems to show that the drilling was done first; the surrounding material was then removed whole by sawing and a very slight blow, the circular core being left as a cylindrical projection on the original mass. That is, the slab was not first detached and then drilled, but the drilling was done first, the cylindrical core left standing, and this annular part removed by the six sawings, in six different directions, and the blow.

The material is coarsely granular and compact in structure, and shows the crystalline character of jadeite. In parts the original crystals of the brown discolored boulder can be easily made out by the naked eye. A hard calcareous deposit has formed over a part of the cut side of the piece. Apparently a long period of time has



elapsed since the central drilling and the removal of the annular part took place.

The specimen is exceedingly interesting as showing (1) that in the prehistoric ages of Guatemala and Mexico raw jadeite did exist, and was no doubt a native product; (2) that it was worked on the spot and not imported in the form of ready-made objects; and (3) that the aborigines of these regions knew the use of the cylindrical drill just as the Chinese have known and used it for many ages.

This specimen was found with several others, in the spring of 1895, at an altitude of 11,000 feet on Mount Tacana, a volcanic mountain in Guatemala near the Mexican frontier. The finder states that in searching for these treasures the party first came upon a roughly made stone idol about a foot high. Close by was a hollow earthen figure seven inches in length, with four legs and a dragon's head with a split tongue protruding from its mouth, one part pointing upward and the other downward; then about six inches further on they came upon the jadeite objects. It appeared as if the animal was guarding the treasure. The Cakchiquels, who inhabit this region, belong to the cultured Maya stock which inhabited Yucatan, and are related to the Tzentsals of Chiapas. [See No. 309, and Dr. Brinton's "Annals of the Cakchiquels" (Philadelphia, 1889).] In a cave about twelve feet lower down stone and copper tools were found, and earthenware jars with figures and inscriptions. Mexico, and doubtless also Guatemala, had reached the copper age when America was discovered.



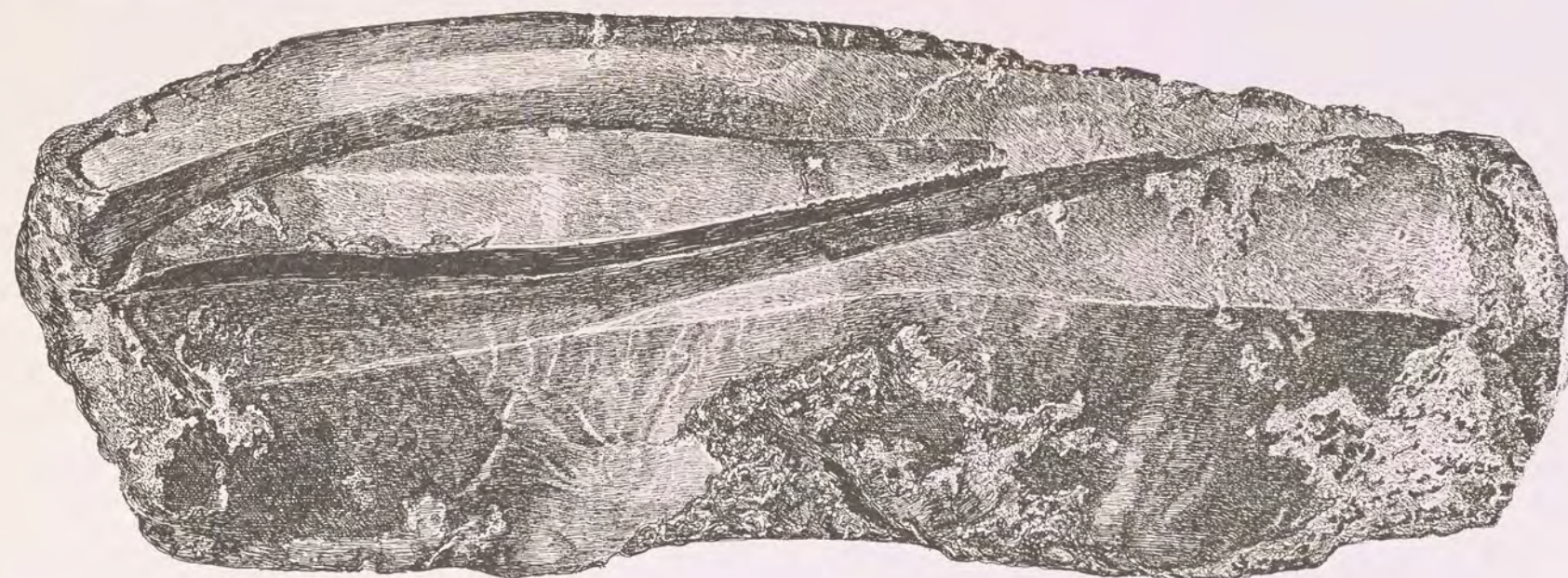
299

## LARGE PARTLY WORKED PIECE

NEW ZEALAND

Dimensions:  $11.22 \times 3.94 \times 1.88$  inches.  $28.5 \times 10.0 \times 4.7$  centimetres. Weight: 5 pounds 1.563 ounces. 2302.780 grammes  
 Specific gravity: 3.0000; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with cloudings of olive-green, and a few rough weathered surfaces of brown and gray

A large, partly worked water-worn block, which was evidently an original stock stone, showing as it does several ground facets and saw-marks, and especially an arrested attempt to remove a piece fourteen centimetres in length and two and one quarter centimetres in width, probably for a *kuru*, or ear-drop, or some other pendent ornament. The grooves made by sawing are fifteen millimetres in depth, and a very little further cutting would have separated the piece from the mass. We have here the first stages in the manufacture, by an aboriginal Maori, of an ornamental pendant.



The material is translucent, homogeneous and compact in structure. Through the centre of the mass there is a vein, four centimetres in breadth, of a light-olive color that by reflected light shows a pearly sheen. The tough splintery character of the material is very apparent in many places. A number of the original weathered surfaces of the block are still unobliterated.

Microscopically studied in thin section, the material is found to be a confused aggregation of amphibole fibres, with occasionally longer streaks of parallel fibres. Its chemical composition is shown in the following analysis by Walden, with reduction by Clarke:

	NaAlSi <sub>3</sub> O <sub>8</sub>	NaFeSi <sub>2</sub> O <sub>6</sub>	Nephrite	
Silica . . . . .	56.41	2.14	5.76	48.51
Alumina . . . . .	.91	.91		
Ferric oxide . . . . .	3.84	3.84		
Ferrous oxide . . . . .	1.92		1.92	
Manganous oxide . . . . .	.15		.15	
Magnesia . . . . .	19.09		19.09	
Lime . . . . .	12.81		12.81	
Soda . . . . .	2.64	.55	1.49	.60
Water . . . . .	2.56		1.15	
	100.33	3.60	11.09	84.23

Abstract	
Nephrite . . . . .	84.23
NaAlSi <sub>3</sub> O <sub>8</sub> . . . . .	3.60
NaFeSi <sub>2</sub> O <sub>6</sub> . . . . .	11.09
Excess water . . . . .	1.41
	100.33

## ORNAMENTS AND CEREMONIAL OBJECTS

300

PREHISTORIC

PENDANT

MOUNT TACANA, GUATEMALA

Dimensions:  $1.62 \times 1.06 \times .09$  inches.  $4.1 \times 2.7 \times .2$  centimetres. Weight: .317 ounce. 8.990 grammes  
 Specific gravity: 3.2373; hardness: 7.0. *Jadeite*  
 Color: Brownish-gray, throughout which are patches of light green

A small oblong flat piece, polished all over and pierced in three places for suspension, doubtless as an amulet. The slab is of uneven thickness and shows traces of sawing on both faces, as well as a deep oblique groove or channel on the back, made before polishing. The perforations appear to have been made from one face only, as the apertures are wider on one face than on the other. One which was made too near the edge has broken out, probably through that edge having been ground away to give a regular outline to the piece.

The material is compact and by transmitted light shows a decided

crystalline structure, the crystals apparently stellated, occasionally radiating from a common centre. In microstructure the piece is quite different from any other in the Collection.

This is one of forty-two pieces found in 1895 at a height of 11,000 feet on Mount Tacana, Guatemala, near the Mexican frontier. The tribe occupying this region is the Cakchiquels, a branch of the cultured Mayan stock inhabiting Yucatan, and related to the Tzents of Chiapas.



301 PREHISTORIC

FRAGMENT OF A WORKED PIECE MOUNT TACANA, GUATEMALA

Dimensions: 1.12 × .88 × .09 inches. 2.8 × 2.2 × .2 centimetres. Weight: .167 ounce. 4.723 grammes  
Specific gravity: 3.2081; hardness: 7.0. *Jadeite*  
Color: An intermingling of light and dark green

Fragment of a small oblong ornament, rectangular in form, polished on both faces and decorated on the front with *kin*, the combining form of the Mayan hieroglyph for "sun." This consists of a small circle in the centre, with two incised parallel lines proceeding at right angles in each of four directions, but not connected with the circle. The central perforation, which was drilled from the back, is surrounded at a little distance by a wider countersunk circle or hollow evidently executed by means of a hollow cylindrical drill. *Kin*, "sun," has the further meaning of "day," "light," "time," "festival," etc., and may be combined with other signs to form derivatives. It is therefore possible that this additional countersunk circle may be an affix or qualifier of some kind the meaning of which we do not know.

The material is homogeneous and compact, and faintly subtranslucent.

This is one of forty-two pieces of jadeite found in 1895 by a small party of explorers at an elevation of 11,000 feet on Mount Tacana, a volcanic chain near the borders of Mexico, in the region occupied by the Cakchiquels, a cultured branch of Mayan stock, speaking a dialect of Maya, and possessing a high degree of civilization at the time of the Spanish Conquest. They are related to the Tzentals of Chiapas, another branch of the same stock, and like them using hieroglyphic writing similar to, if not identical with, that of the Mayas. See Nos. 298, 300, and 309.

302 PREHISTORIC

SMALL PENDANT

MEXICO

Dimensions: .91 × .81 × .47 inch. 2.3 × 2.0 × 1.2 centimetres. Weight: .287 ounce. 8.1356 grammes  
Specific gravity: 3.0522; hardness: 7.0. *Jadeite*  
Color: Greenish-gray with decomposed brown spots

A small thick pendant intended perhaps to represent a human head. It has been pierced at both sides vertically and from both faces, the two drill holes meeting in each instance in a tiny aperture at the centre, and at the smaller end there are girdlings or groovings the purpose of which is unknown. On the top of this smaller end

an attempt appears to have been made to drill the object with a cylindrical drill, as the remains of the central core are still visible.

The material is quite compact and translucent, and shows traces of a granular structure.

303 PREHISTORIC

SMALL MASK

MEXICO

Dimensions: 1.16 × 1.0 × .16 inches. 2.9 × 2.5 × .4 centimetres. Weight: .192 ounce. 5.439 grammes  
Specific gravity: 2.8320 (average of three determinations); hardness: 7.0. *Jadeite*  
Color: Light emerald-green and gray

A tiny mask carved in flat relief, with two submarginal perforations, one at each side, in the line of the eyes, and one lower down reaching from side to side. Its exact finding-place is not known, but it is supposed to be from the Valley of Mexico, though it may have come from some place farther south.

The material is subtranslucent, of a fairly compact granular structure, the green material forming a thin well-defined layer on the front. The layer on the back was removed for chemical analysis and microscopical examination, hence the roughness on the back.

Thin sections of the material were examined microscopically by Professor Iddings, who describes it as consisting of irregularly shaped crystals of jadeite scattered through albite, which forms interlocking crystals of variable size, some individuals enclosing a number of crystals of jadeite. The albite is very pure and fresh and exhibits a characteristic cleavage and optical properties. Twinning in polysynthetic lamellæ is developed to only a slight extent. Many crystals are not twinned.

Apparently the jadeite and albite crystallized at one time. Their intimate association is interesting because of their chemical relation—jadeite being a metasilicate of alumina and soda, while albite is a polysilicate of alumina and soda. They might have formed from a mass too rich in silica to form jadeite wholly, and too poor in silica to form albite singly.

The analysis by Walden and reduction by Penfield gave the following results:

		Nephrite CaMg(SiO <sub>3</sub> ) <sub>2</sub>	Jadeite NaAl(SiO <sub>3</sub> ) <sub>2</sub>	Albite NaAlSi <sub>3</sub> O <sub>8</sub>	Theoretical comparison of a mixture of		
					Nephrite	Jadeite	Albite
Silica . . . . .	63.47	2.20	28.80	32.47	2.17	28.87	32.48
Alumina . . . . .	20.76		11.53	9.23		12.43	9.20
Ferrie oxide . . . .	1.27		1.27				
Magnesia . . . . .	1.11	1.11			1.08		
Lime . . . . .	1.16	.50	.66		.50		
Soda . . . . .	11.98		6.63	5.35		7.46	5.81
Potash . . . . .	.34			.34			
Water . . . . .	.36						
	100.45	3.81	48.89	47.39	3.75	48.76	47.49

The analysis indicates the presence of a little nephrite.



304 PREHISTORIC

## SMALL BEAD

MEXICO

Dimensions: .44 × .34 inch. 1.1 × .9 centimetres. Weight: .061 ounce. 1.741 grammes  
 Specific gravity: 3.1633; hardness: 7.0. *Jadeite*  
 Color: Lettuce-green mottled with gray

A small beautifully polished bead perforated lengthwise, apparently from one end only, the aperture at one end being three and one half millimetres and at the other only two and one half millimetres. It was evidently made from a small rolled pebble, some of the natural irregularities of which are still preserved.

The material is translucent and highly crystalline, and consists of a mixture of lettuce-green with a light-gray, almost white, material, both of which are penetrated by acicular crystals of a greenish-black and light-green color, which may be actinolite.

305 PREHISTORIC

## A BEAD

MEXICO

Dimensions: .72 × .62 inch. 1.8 × 1.6 centimetres. Weight: .349 ounce. 9.885 grammes  
 Specific gravity: 3.3210; hardness: 7.0. *Jadeite*  
 Color: Bluish-green with small veinings of light gray

A round five-lobed bead, perforated by drilling from opposite sides, the aperture being twice as large at the outer ends as at the centre.

The material is translucent and of highly crystalline structure, with parallel rows in the bluish magma of small light-gray inclusions of irregular shape. The piece is susceptible of a better polish than has been given to it.

Jade beads similar to this are still occasionally found in different parts of Mexico, and give evidence of being more highly valued by their original owners than beads of any other material, the ancient Aztecs prizing jade above gold and silver and all other precious

stones. They are highly polished and of various sizes and shapes, the most common size being about two centimetres in diameter. There are also cylindrical beads, and others irregular in shape, some carved with figures and faces. They were doubtless hand polished, requiring months, possibly years, of rubbing with the hands. A most important find was made a few years ago in the city of Mexico, when workmen excavating for a sewer unearthed a great quantity of objects pertaining to an old temple, among which were about a thousand jade beads, more than twice as many as had previously been found in all Mexico.

306 PREHISTORIC

## LONG TUBULAR BEAD

GUERRERO, MEXICO

Dimensions: 3.06 × .44 inches. 7.8 × 1.1 centimetres. Weight: .893 ounce. 25.312 grammes  
 Specific gravity: 3.3054; hardness: 7.0. *Jadeite*  
 Color: Greenish-gray speckled with green of different shades

A long tubular bead of rounded square section, corresponding probably to the *kudatama* or tubular bead of the ancient Japanese. It is a typical example of a very large class of objects used in old times among the Mexicans. It is finely polished and drilled throughout its entire length of seventy millimetres, the aperture at one end having a diameter of five millimetres, the diameter of the other being slightly

smaller. A slight shoulder in the perforation shows that the drills used were not of the same girth, and did not meet exactly. It is a remarkably good example of Mexican drilling, and is a typical specimen of Mexican jadeite. The material is translucent, crystalline in structure, and consists of a faint greenish-gray magma through which are interspersed spots of dark-green pyroxene.

307 PREHISTORIC

## EAR-ORNAMENT

MEXICO

Dimensions: 1.66 × .97 inches. 4.2 × 2.4 centimetres. Weight: .551 ounce. 15.623 grammes  
 Specific gravity: 3.2981; hardness: 7.0. *Jadeite*  
 Color: Dark green thickly interspersed with lighter green

A trumpet-shaped ornament anciently worn in the ear. Near the smaller end it is pierced on both sides, either for the purpose of fastening the ornament into the ear, or the plumes in their holder, if that was its purpose. The lapidary work is interesting, inasmuch as the boring was done with a straight rod, and there is considerable curving as the mouth begins to flare.

By transmitted light the material is seen to be a dark-green magma in which are interspersed lighter green crystals.

It has been supposed by some that this is a plume-holder, but the weight of evidence is in favor of its being an ear-ornament. There is one in the Peabody Museum at Harvard that was found alongside the skull in which it had been inserted, and the monuments show many of the gods similarly ornamented.



## 308 PREHISTORIC

## BIRD'S HEAD

MEXICO

Dimensions:  $1.06 \times .59 \times .31$  inches.  $2.7 \times 1.5 \times .8$  centimetres. Weight: .210 ounce. 5.958 grammes  
 Specific gravity: 3.2565; hardness: 7.0. *Jadeite*  
 Color: Brilliant lettuce-green mottled with light gray

A tiny amulet or ornament in the form of a bird's head with hooked parrot-like beak. The outline of the head and beak is remarkably well executed by means of polished grooves. The eye-sockets, which are slightly oval, were each made by two drillings, at different angles, with a hollow circular drill, and the breaking of the central core by a blow. This is evident from the small raised surface left in the centre of each, and the junction of the two drill holes is shown by a little raised ridge. Besides the large semi-circular opening of the beak, there is an oblique perforation, twenty-six millimetres in length, running from the back of the head through to the mouth, the inner end of the perforation being smaller than the outer end, thus showing that the drill had become smaller during the process of drilling. It is also evident from the groove in the curved beak that the borer extended some distance beyond the smaller aperture, and the groove itself also shows that the perforation was made after the piece had been polished.

Visible specks of fine gold in the sockets suggest that the eyes,

now lacking, were of gold, or of rock-crystal or other stone secured in place with gold.

This object is a typical example of Mexican jadeite, and of Mexican lapidary work. The material is translucent, is highly crystalline in its structure, and has taken a brilliant polish.

It was no doubt worn in prehistoric Mexico as an amulet or ornament. Nicolas Monardes, who in 1565 and later wrote on the *materia medica* of the West Indies, tells us that jade stones or *piedras de hijadas*, as he calls them, were brought into Spain in "divers forms and fashions, for so the Indians had them in old time, some like to fishes, others like to heads of birds, others like to bills of popinjays, others like to round beads, but all pierced through for so did they use them to wear them hanging" (Frampton's Translation). The bird represented is supposed to be the falcon, the *cozquauhtli* of the Mexicans.

The specimen was procured by Mr. W. W. Blake from the Hill of Texcotzingo, a few miles east of Texcoco, near Netzalmalcoyott's Bath, Mexico.

## 309 PREHISTORIC

## AMULET

MEXICO (?)

Dimensions:  $3.38 \times 2.16 \times .72$  inches.  $8.6 \times 5.5 \times 1.8$  centimetres. Weight: 4.597 ounces. 130.337 grammes  
 Specific gravity: 3.2699; hardness: 7.0. *Jadeite*  
 Color: Lettuce-green on the front; grayish-green on the back

A finely sculptured amulet said to have been found in the state of Guerrero, Mexico, but archaeologists who have examined the specimen and are acquainted with Mexican antiquities are of the opinion that it is not Mexican, but Mayan in motive and origin, and in all probability came from Yucatan, or possibly from Chiapas, as the Tzental of that province were acquainted with both Mexican and Mayan civilization, and still use amulets of this kind. In form it is roughly heart-shaped, being wide and rounded in outline at the top, but tapering to a rounded point at the lower end. It bears on its face a finely sculptured human head framed in the gaping jaws of some animal, probably a serpent, whose eyes, nose, and teeth are clearly shown.

There is some difference of opinion among archaeologists who have studied the piece as to what the head represents. By one it is thought to represent the serpent-goddess, a familiar deity revered alike by Mexicans and Mayans as the personification of fruitful rains and showers. But Dr. Brinton tells us that the serpent-goddess is depicted as an old woman of severe expression, usually accompanied by certain attributes which are here absent. Dr. Brinton's own opinion was that the face is that of a young woman, a goddess or a prophetess, and he remarks in a letter to the writer that the Tzental of Chiapas, who used hieroglyphics similar to those found on the back of this piece, believed that the gods spoke through young women, and he mentions the fact that all their insurrections were led by young women.

Dr. Förstermann of Dresden directs attention to the fact that the eyes are closed, and regards the figure as the representation of some deceased person, to perpetuate whose memory this amulet was prepared and worn.

The inscription on the back consists of nine Mayan hieroglyphs. Several scholars who have made a study of Mayan have examined this inscription with care, and have succeeded in deciphering most of the glyphs. A real translation, however, is at present impossible, owing to the fact that the study of Mayan writing is still in its infancy. Dr. Förstermann ventures very apologetically on the following tentative version:

"From the day 4 *ahau*, the seventh of the month *zip*, when the god K<sup>1</sup> ruled, lived (the person whose face is shown on the other side) until the year which begins with 8 *kan* on the 13th day of the month *zec*."

He explains that the two years here mentioned were fifty years apart, and he reckons from this that the deceased person referred to lived fifty years, two months, and six days. What dates in our system of chronology correspond to this Mayan period we do not know. Their calendar system was very complicated. The object itself is undoubtedly of high antiquity, but whether its true date should be a century or ten centuries before the discovery of America by Columbus we do not know and have at present no means of finding out. Nor do we know the name of the person commemorated, as the Mayan script was incapable of expressing it.

It is a valuable and fine example of aboriginal art, and may with propriety be regarded as of Tzental-Mayan origin. It is remarkable alike for the unique character of the design, its well executed sculpture, its polish, and its hieroglyphic message.

Running transversely through the piece in the line of the forehead is a perforation, six and one half millimetres in diameter at the outer ends and fifty millimetres in length, showing that the figure was worn suspended from the neck, either as a separate pendant or as part of a necklace of beads; and the eleven submarginal and two subsurface perforations that are found around the edge of the piece and on its face show that the figure itself was decorated with as many suspended ornaments, such as are frequently found in ancient Mexican graves, and made of jadeite, obsidian, amethyst, and other hard stones.

The material is subtranslucent and of finely granular structure. When the specimen is laid on its edge and viewed from the face it is seen that the lettuce-green color extends only to a depth of two to four millimetres. Beyond that it changes to a light lustreless greenish-gray. On the face of the piece are three minute flaws that are brown in color, due to the infiltration of hydrous oxide of iron. Two of these flaws pass entirely through the mass, but without any apparent danger of its breaking.

<sup>1</sup> This is a divinity whose pictograph occurs with great frequency in the Mayan codices, but whose proper designation is unknown. He is therefore catalogued by scholars as "K." Dr. Brinton considers him to be simply one of the many manifestations or incarnations of Itzamna, "the god of storm."



310 PREHISTORIC

## TEETH INLAID WITH JADEITE

MEXICO

Hardness: 7.0. *Jadeite*  
Color: Pea-green

Three human teeth inlaid with pea-green jadeite. They were found by Mrs. Mary Robinson Wright in a grave four feet deep, in Tacamaca near Guadalajara, state of Jalisco, Mexico, together with the skeleton and skull, both much decayed, to which they belonged. The three teeth inlaid are the superior left lateral, the superior left centre, and the superior right canine. It is probable that the remaining front teeth of the upper jaw were similarly decorated.

Similarly encrusted teeth, found in Yucatan, now form part of the Archaeological Collection in the Peabody Museum at Harvard University, and a tooth inlaid with turquoise and labelled "Peru" is exhib-

ited in the Museum für Volkerkunde, in Berlin. It is stated in the reports of the Wilkes Antarctic Expedition that in some of the Pacific islands the natives are in the habit of ornamenting their front teeth with square pieces of rock-crystal. Human skulls have been found in Mexico magnificently encrusted with turquoise and marine shells—an after-death ornamentation. These teeth were in all probability inlaid during the life of the individual.



313 PREHISTORIC

## SMALL IDOL

MEXICO

Dimensions:  $2.81 \times 1.31 \times .94$  inches.  $4.6 \times 3.3 \times 2.4$  centimetres. Weight: 4.892 ounces. 138.702 grammes  
Specific gravity: 3.2410; hardness: 7.0. *Jadeite*  
Color: Sage-green

A small idol in the form of a sitting figure with folded arms. The face is characteristic of the locality; the ears represented as having labrets in them. Around the forehead is a wide band, suggesting a cap or crown, ornamented with three large protruding circles, one in the centre and one on each side. On top of the head is a large knob

on the left side of which are a number of lines representing hair falling down to the shoulder.

This extremely interesting object was obtained from an Indian who had found it in a mound near Ocotlan, about twenty-five miles south of the city of Oaxaca, Mexico.

314 PREHISTORIC

## FRAGMENT OF A WORKED PIECE

YUCATAN

Dimensions:  $.84 \times .56 \times .16$  inch.  $2.1 \times 1.4 \times .4$  centimetres. Weight: .114 ounce. 3.241 grammes  
Specific gravity: 3.313; hardness: 7.0. *Jadeite*  
Color: Sage-green

Fragment of a worked piece used as a pendant. It has been perforated near one side by drilling from opposite faces with a cone-shaped tool, making a hole five millimetres in diameter at the outer ends of the perforation, and ending up in the centre with a hole only one millimetre in diameter. The piece had been ground outside and in,

being slightly convex on one side and concave on the other. The material is translucent, and finely granular at the fracture, showing reflections which are apparently cleavages of jadeite crystals, which might be mistaken for mica.

From the U. S. National Museum.

315 ABORIGINAL

NECK-ORNAMENT (*Heitiki*)

NEW ZEALAND

Dimensions:  $6.09 \times 3.0 \times 1.0$  inches.  $15.5 \times 7.6 \times 2.5$  centimetres. Weight: 15.762 ounces. 446.880 grammes  
Specific gravity: 3.0027; hardness: 6.5. *Nephrite*  
Color: Pear-leaf-green

A large pendant in the form of a grotesque squat human figure with big owl-like head and eyes, conventionalized body, and highly attenuated limbs. It is pierced submarginally at the top for suspension from the neck, hence called by the Maoris *heitiki*, or "neck-ornament."

Students of New Zealand folklore assure us that such objects were not regarded as gods, nor were they worn as objects of worship; they were simply mementos of ancestors, their value and sacredness lying in the fact that they had been made, handled, or worn by the dead of past ages. They were handed down from generation to generation, and when a family was about to become extinct the last possessor of one would secretly bury it in the earth. We are further assured that a *heitiki* is never the portrait of any particular person. It will be noticed that only three fingers are found on each hand, a peculiarity which is explained by saying that if a *heitiki* represented any particular person and any one should insult it the affront would have to be avenged, and to avoid such a contingency the objects were made with only three fingers!

Chapman ("Transactions of New Zealand Institute," 1891, Vol. XXIV, p. 520), quoting one of the early missionaries, says that when any one was slain in battle his friends would take the *heitiki* from his neck, lay it on a tuft of grass or on a clean leaf, and weep and sing over it, in order to bring more vividly to their recollection the person who had been slain. He further states that "when a long absent relative arrives at a village the *heitiki* is taken from his neck and wept over for the sake of those who formerly wore it."

This is an unusually large and fine *heitiki*, and is a beautiful specimen of aboriginal lapidary work. The pupil of the eye, which rises above the surface of the face, is the central portion of a core of jade left standing in drilling the ball, which is formed of part of a brilliant iridescent shell of the *Halotis* or abalone.

The material of the piece is translucent, homogeneous and compact, and has taken a high polish. There are some metallic inclusions, probably chromic iron. At one place on the back portions of the boulder-weathering are still visible.

The specimen came from the Wells Collection of London.



## ANCIENT OR TOMB PIECES FROM CHINA

A CERTAIN number of pieces, thirty-two in all, have been separated from the general collection of art objects of Chinese jade for the reasons which have been stated in the article on "Tomb Jades" in Volume I, Part V. The term *tomb* has been adopted as a synonym of the Chinese word *han*, which originally meant "placed in the mouth" of a corpse before burial, was afterward extended to include all jade objects buried in tombs in ancient times, and ultimately employed, with a yet wider signification, to comprise all old jades dug up from the ground, whether lost during floods or earthquakes, or purposely buried in times of famine or rebellion. So our "tomb jade" is to be taken as a synonym of the *han yü* of the Chinese archaeologist in the widest sense of the term.

The group of tomb jades in the Collection contains a variety of archaeological and ceremonial objects, corresponding to those from other countries besides China which were classed in the last division. The tomb jades bridge over the interval between prehistoric and historic times in the far East. They have been roughly classified under two headings: (1) "ancient," that is to say, previous to the beginning of the Han dynasty in the year 206 B. C.; (2) subsequent to 206 B. C., the specimens under the second heading being further arranged in chronological order according to the dynasties to which they are referred. A list of these dynasties is available for reference in the article on "Jade in China" (Volume I, Part II).

One of the chief criteria of the tomb jades is that they exhibit evidences of decomposition of material and staining of surface such as would be produced by burial underground for a prolonged period. This is strikingly exemplified in the large hanging gong, No. 327, which is inscribed with the date of the reign of an early emperor of the Han dynasty, corresponding to 116-111 B. C., and which has every appearance of belonging to that period, the surface being thoroughly disintegrated, and so soft and opaque that it might be taken for steatite or pagodite, were it not for a fresh gap at the top where a piece has been cut out for analysis, revealing the original structure of the jade. The sacrificial cup, No. 328, modelled in graceful lines and of peculiarly archaic design, may also be referred to as an example of the commencement of degranulation in the nephrite material under similar circumstances.

Taking advantage of the fact that nephrite after long burial underground becomes so softened and opaque as to look like steatite, the "heathen Chinese," with intent to deceive, is wont to fashion for the unwary a supply of so-called "ancient jade," carved out of steatite or

some other variety of soapstone and cunningly stained to imitate the gradual mellowing effect of time. Some such pieces have occasionally intruded into the Collection, but only to be forthwith discarded as soon as the rigid tests to which everything was submitted revealed their real structure. A group might perhaps have been profitably put in some corner as a warning, but the collector is apt to lose patience with such base imitations.

Time changes the hardest of materials; and the alterations of color produced in jade under its influence are comparable to those often displayed on the surface of prehistoric flint weapons as described by Mr. C. H. Read in his "Guide to the Antiquities of the Stone Age," British Museum, 1902 (p. 93): "Flint long exposed to the scorching sun of Egypt becomes tinted in many gradations of colour varying from pale buff to a deep orange-brown, but it would be hazardous to assume a connection between the antiquity of an implement and the comparative intensity of its discoloration." Several instances of the development in jade of variegated iron-rust tints and all shades of *feuille-morte* brown have been given in Volume I, with references to the colored plates in which they have been illustrated. The Chinese antiquary delights in fanciful accounts of the varied hues developed in a specimen of tomb jade, which he ties up in a bag filled with bran and subjects to gentle, long-continued friction, to bring out a bright display of color.

Among the ancient jades, as defined above, which are comprised in the first subdivision of this class, will be found several examples of the ceremonial objects which were referred to in Volume I in the article on "Jade in China." No. 316 is a massive chariot-wheel nave of unknown antiquity, wrought in brown and black nephrite with russet spots and patches, having seams and fractures of dark *feuille-morte* color and covered all over with a russet patina. The oblong pointed tablets called *kuei*, which used to be held in the hands of officials in ancient times as insignia of rank, are represented by No. 317, the rich brown coloring of the surface of which is attributed to gradual oxidation while buried in the ground; the round perforated medallions called *pi*, which were also badges of rank, and used, besides, as sacrificial or *ex voto* offerings, are represented by No. 319, a sculptured medallion of gray nephrite clouded with various shades of brown. Nos. 318 and 325 are sacrificial tablets modelled in the shape of the ancient badges of rank and carved with mythological symbols of the ancient nature-worship of the Taoist cult: the first is nephrite of faint greenish-gray color stained and mottled with dead-



oak-leaf and black; the second is carved in the jade-like mineral called bowenite, overspread with clouds of warm russet browns. Nos. 320, 322, 323, 324, and 326 are examples of archaic celts carved with mythological designs, engraved with talismanic inscriptions, or plain and diminutive, being intended either to be worn as amulets or adapted for some ceremonial use. The remaining specimen, No. 321, is an ancient tubular bead, or tassel-slide, of grayish-yellow nephrite with *feuille-morte* markings at both ends.

The second subdivision of the class includes such specimens subsequent to the beginning of the Han dynasty in the year 206 B. C. as show signs of changes of material resulting from burial underground. The first piece in the list, No. 327, a large flat gong carved with archaic designs and perforated at the top for suspension, has already been referred to as dated in the period Yuan-ting (116-111 B. C.), which was part of the reign of the celebrated Wu Ti, the "Warrior Emperor" of the former Han dynasty, who ruled China from 140 B. C. to 87 B. C., and was the first to achieve the conquest of the West, the traditional home of jade. The other pieces attributed to the Han dynasty (206 B. C.-220 A. D.) are the beautiful sacrificial wine-cup, No. 328, alluded to above; a weathered armlet, No. 329, of solid form, decorated with a pair of archaic dragons; an archer's thumb-ring of old style, No. 330, made of gray nephrite clouded and veined with very dark brown; an ancient signet called *kang mao*, No. 331, in the shape of an octagonal cylinder, pierced through the middle to be strung on the girdle, and engraved upon the sides with a talismanic inscription in eight lines in the script of the period; a girdle-ornament, No. 332, fashioned apparently out of a celt, carved in openwork relief with archaic lizard-like dragons; and a pair of large square seals, Nos. 333, 334, of sage-green nephrite, engraved with dragons and scrolls of fret and with felicitous inscriptions in the handwriting of the Han dynasty.

The pieces attributed, from their style, to dynasties later than the Han comprise: a wine-cup, No. 335, fashioned in the shape of a horn, of light sage-green color stained and encrusted with brown patches; a large tall cup, No. 336, of charming naturalistic design, simulating a folded lotus leaf, with the round stalk curving up to form the handle of the cup, carved in a yellowish-gray translucent nephrite much fissured and showing many veinings which are browned by infiltration of some kind, perhaps while buried; a bold, vigorously carved vase, No. 337, skilfully designed in the semblance of a rolled-up lotus leaf bound together with waving reeds into a bundle with other leaves and flowers, so that the stems form a light open pedestal, while the blossoms and cup-shaped fruit of the lotus figure as an appropriate natural decoration for the vase; a girdle-appendage, or *niu-tzu* (=Japanese *netsuke*), No. 338, fashioned as a crouching tiger, of gray nephrite veined throughout with brown, so that the veined

surface reminds one of a piece of crackled celadon porcelain, which is described by T'ang Jung-tso, in his Chinese article in Volume I, as one of the characteristic varieties of tomb jade; a wine-pot, No. 339, of antique form and design, decorated with floral scrolls, mounted upon a hollow foot; and a sacrificial wine-vessel, No. 346, of gray nephrite with black cloudings and veinings, decorated in bold undercut relief with archaic dragons and scrolled clouds, which is disintegrated and stained as if from burial underground.

The last two pieces are attributed to the Ming dynasty (1368-1644). With regard to the rest in the list, there being nothing in their style to point to any particular time, they are headed "period unknown." The sacrificial vessel, No. 340, with two loop-handles springing from the mouths of grotesque monsters, is modelled in the form of one of the ancient bronze vessels which is often utilized in more recent times for burning incense; its *feuille-morte* veining, which is well marked, is due to the infiltration of the hydrous brown oxide of iron. The engraved celt, No. 341, carved in low relief with archaic designs and pierced to be worn as an amulet, is of pale-green nephrite stained with a broad band of brown and black which has penetrated the material to some depth. The three signets, Nos. 342-344, which are carved in relief with divination diagrams and Taoist charms, are also of pale-green nephrite, stained to a greater or less extent with black, and encrusted, on No. 343, with dead-oak-leaf brown; the stained part is opaque, the opacity being due to the absorption of some coloring matter, but it was found to be difficult to decide whether the staining was natural or intentional, although one of the pieces (No. 344) was broken for the purpose. The ancient wine-cup, No. 345, with a ring-handle surmounted by a grotesque winged head displaying the conventional features of the devouring *tao-fieh* ogre, is of light-gray nephrite permeated throughout with a staining of russet-brown, its many veinings and seams being filled with a yellow-brown infiltration which influences the hue of the whole piece.

All the tomb jades in the list come from China and are of Chinese workmanship with the exception of the last, No. 347, an ancient curved bead of light emerald-green jadeite with dead-oak-leaf stainings, which is of Japanese origin. These "crooked" or curved beads, which are called in Japan *magatama*, are often found in ancient graves in that country, made usually of rock-crystal or some other quartzite stone, rarely of jade. They are pierced at one end for suspension on a necklace or pendent breast ornament, and are supposed to be fashioned in the form of bears' claws, which they resemble in shape. The jadeite material is translucent, and is unique in being penetrated by acicular crystals of rutile or actinolite, probably the former. No jade has hitherto been found *in situ* in any part of Japan, and the geological locality of the material is so far undiscovered.

PREVIOUS TO 255 B. C.

Dimensions: 5.72 × 2.81 × 2.81 inches. 14.5 × 7.1 × 7.1 centimetres. Weight: 2 pounds 8.841 ounces. 1157.833 grammes  
Specific gravity: 2.9429; hardness: 6.5. *Nephrite*  
Color: Brown and black mottled with russet spots and patches. The seams and fractures are of a dark dead-oak-leaf color, the whole covered with a russet patina

A thick massive object of square section, with four oblong sides externally, but with the corners truncated and reduced so as to leave a thick round lip projecting at each end. The interior is uniformly hollowed out into a cylindrical cavity, into which the end of the axle would be run.

Several objects of this kind are figured in the work on ancient jade,

"Ku Yü T'ou Pu,"<sup>1</sup> the forty-eighth book of which is entirely devoted to "Chariot Hubs." The first is exactly like this one, and is thus described: "This object is three inches in length, of rectangular form externally, and two inches across. It is of yellow-colored jade with red spots sprinkled throughout. The outer surface is plainly polished, and not decorated with any ornamental design." The editors

<sup>1</sup> Ku Yü T'ou Pu, or Illustrated Descriptions of Ancient Jade, is a catalogue in one hundred books of the jade objects belonging to the first emperor of the Southern Sung dynasty. It was published in 1176, a year after his abdication in favor of his son, and

is the most valuable work on the subject of jade antiquities in China. It contains more than seven hundred illustrations. For an analysis of its contents refer to Dr. Bushell's Introduction to Mr. T'ang's essay on "Jade in China" in Volume I.



quote an old book called "Ch'ê Ching," or "Chariot Classic," which says that "these jade naves were allowed to be used only upon the chariots of sovereign princes and nobles, upon the ancient so-called gilded chariots," and adds that "they are all anterior to the Han dynasty." There are many others figured in the same book, four-sided, six-sided, and octagonal, and all are referred to the three ancient dynas-

ties (2205-255 B. C.), so that we must attribute this to the same remote period. The material of this ancient piece is in part subtranslucent, but most of it is opaque, and shows much disintegration, especially near one corner, due to the action of minerals in the earth during the long period of its burial.

317

ANCIENT

TABLET OF RANK (*Kuei*)

CHINA

Dimensions: 6.5 × 2.03 × .41 inches. 16.5 × 5.2 × 1.0 centimetres. Weight: 5.626 ounces. 159.498 grammes  
Specific gravity: 2.9430; hardness: 6.5. *Nephrite*  
Color: Light opaque grayish-yellow, heavily stained with dead-oak-leaf

A polished tablet of elongated oblong outline, the sides inclining somewhat from below upward, till they bend suddenly inward toward a pointed apex, the whole resembling somewhat the blade of a dagger. From the apex to the base the blade is strengthened on the two faces by a vertical ridge, so that the section is much thicker in the middle than at the sides, which, however, are not sharpened like the edge of a dagger.

This must be one of the insignia of rank described as held in the hand of officials in ancient times. The form answers generally to the description of the *kuei*, one form of which was of oblong shape with the two sides truncated at the top half an inch to form a pointed apex. The rich brown coloring of the surface is due, no doubt, to gradual oxidation while buried in the ground. The Chinese delight in enhancing the effect by gradual friction. The general effect is that of a stained meerschaum pipe.

The material is translucent and shows on a fractured part the characteristic splintery structure of nephrite. Under the microscope it is seen to consist of minutely fibrous amphibole and considerable com-

pact amphibole in irregularly shaped crystals, in clusters and streaks throughout the rock. There are also remnants of small jadeite crystals in aggregations and streaks and sometimes in spherulitic clusters.

From the lower end of the tablet a piece was removed for the chemical analysis (by Walden) here given, with Clarke's reduction of the same.

		Doubtful	Nephrite
Silica . . . . .	57.37	.58	56.79
Alumina . . . . .	1.03	1.03	
Iron oxide . . . . .	.78	.78	
Magnesia . . . . .	23.96		23.96
Lime . . . . .	13.03		13.03
Alkalis . . . . .	undet.	?	
Water . . . . .	3.63	1.57	2.06
	99.80	3.96	95.84

Iddings's work shows that the material was once jadeite, but is mainly altered to amphibole. The alumina corresponds to about four per centum jadeite.

318

ANCIENT

SACRIFICIAL TABLET (*Kuei Pi*)

CHINA

Dimensions: 9.69 × 6.25 × .47 inches. 24.6 × 15.9 × 1.2 centimetres. Weight: 1 pound 4.401 ounces. 578.360 grammes  
Specific gravity: 2.8648; hardness: 6.5. *Nephrite*  
Color: Faint greenish-gray stained and mottled over the greater part of the surface with dead-oak-leaf and black

A large sacrificial tablet of complicated form and design, intended to be held in the hand of the officiating priest during the worship of the sun, moon, and stars. It is modelled as a combination of the long, oblong, pointed tablet, called *kuei*, and of the circular tablet pierced with a round hole in the centre, called *pi*, whence it derives its name of *Kuei Pi*. This peculiar form of sacrificial tablet is described under this name in the ancient "Chou Li" ("Ritual of the Chou dynasty") as fashioned with a circular body twice as broad as the round hole in the middle, having the top of the *kuei* projecting from it above, with the corners truncated half an inch toward the pointed apex. Such tablets are described in the same work as having been used by the ancient kings in the worship of the sun, moon, planets, and fixed stars.

There is a rounded projection at the base, uniting, as it were, the two forms, which is carved in relief with crested waves to represent the ocean. The obverse shows the outline of the *kuei*, with the two sides broadening upward, and a prominent vertical ridge in the middle, reaching from base to apex. Its surface is carved at the base with a tall peaked mountain rising from the waves beneath, which

represents Tai Shan, the famous ancestral mountain of ancient China. On the upper part are engraved two circular discs, one on either side, supported on scrolls of cloud, the one on the left enclosing the figure of a three-legged bird representing the sun, the one on the right enclosing the figure of a hare with pestle and mortar, representing the moon.<sup>1</sup> The three smaller discs above, arranged in a triangle, represent a constellation with the stars connected, in the usual Chinese manner, by straight lines.

The reverse face shows the circular medallion-like form of the *pi*, with its surface covered, as it is on the two sides of the obverse, with mammillary protuberances, encircled with raised rims round the circumference, and round the central pierced hole, which is countersunk in the middle of the tablet.

At the junction of the *kuei* and *pi* above are carved in openwork a pair of dragons of conventional design, with scrolled bodies.

The material of this piece is only subtranslucent and seems to have undergone much disintegration while buried, thus accounting for the somewhat low specific gravity as well as for some of the color.

<sup>1</sup> The hare is connected with the moon by very early traditions, Indian as well as Chinese, and is constantly depicted by Taoist legend as the servitor of the immortal genii, who employ it in pounding drugs to compound the elixir of life. The "bird with three legs," which inhabits the sun, is mentioned by the philosopher Huai Nan Tzū, who wrote in the second century B. C.







No. 325

SACRIFICIAL TABLET

(*Kuei Pi*)

Previous to Han Dynasty

No. 324

SMALL CELT

(*Hsiao Chan*)

Previous to Han Dynasty

Nephrite

No. 317

TABLET OF RANK

(*Kuei*)

Previous to Han Dynasty

Nephrite

No. 330

ARCHER'S THUMB-RING

(*Pan Chih*)

Han Dynasty (B. C. 206–A. D. 220)

Nephrite

No. 331

ANCIENT SIGNET

(*Kang Mao*)

Han Dynasty (B. C. 206–A. D. 220)

Nephrite

“TOMB JADES” OF CHINA











319 ANCIENT

PIERCED MEDALLION (*Pi*)

CHINA

Dimensions: 5.0 × .38 inches. 12.5 × .9 centimetres. Weight: 7.465 ounces. 211.658 grammes  
 Specific gravity: 2.9035; hardness: 6.5. *Nephrite*  
 Color: Gray clouded with various shades of brown



A circular pierced medallion carved in the form of a *pi*, the round tablet with a hole in the middle used in ancient times as one of the six badges or insignia of rank, as well as for ceremonial and other purposes. T'ang Jung-tso, in the fourth section of his "Discourse on Jade" (*Yü Shuo*), quoting the commentary to the "Rites of Chou," mentions two kinds of *pi*: the *ku pi*, or grain symbol, held or worn by princes of the fourth rank, and the *p'u pi*, or reed symbol, held by princes of the fifth rank. The same writer, in Section VI of his work, tells us that in the sacrificial worship of the great Ch'ing dynasty (which came to the throne in the year 1644 of our era) dark-colored *pi* were used in the principal ceremonies at the Temple of Heaven (as was customary in the most ancient times), red *pi* on the altar of the sun, and white *pi* on the altar of the moon.

The *pi* of nephrite here illustrated is decorated in slight relief with mythological subjects. The fish-dragon (*yu-lung*), with a bearded two-horned serpent-like head and a scaled fish-like body with four spreading fins, has its hinder part hidden in a band of clouds, carved with *lei wên*, the spiral scroll design indicative of thunder (*lei*). From the opposite side of the cloud-band project the features of the storm-ogre (*tsao-tieh*), with its eyes and fangs clearly delineated, the other lineaments projecting in highly conventionalized scrolls so as to fill in the field. It was intended, perhaps, as an *ex-voto* offering for the shrine of the god of thunder.<sup>1</sup>

320 ANCIENT

ARCHAIC CELT (*Yao Chan*)

CHINA

Dimensions: 2.0 × 1.84 × .28 inches. 5.1 × 4.7 × .7 centimetres. Weight: 1.002 ounces. 28.402 grammes  
 Specific gravity: 2.9524; hardness: 6.5. *Nephrite*  
 Color: An irregular blending of brown and yellow with some small white spots, the yellow predominating

An archaic celt grooved along the top, which is narrower than the cutting edge. The piece is slightly concave on one face and correspondingly convex on the other, and is pierced near the lower edge for suspension as an amulet. The implement is thin and has all the appearance of having been formed for the purpose of a scraper or a knife. By the Chinese it is said to be a *han yü*, that is, a piece of jade which in ancient times was customarily placed on the tongue of

a corpse, from *han*, to hold in the mouth. On the convex face are three markings that were undoubtedly formed by a hollow tubular drill.

Mrs. Zelia Nuttall<sup>2</sup> mentions a similar mortuary custom among the ancient Mexicans. It consisted in placing a piece of jade or precious green stone in the mouth of a noble person after death, saying that it was "his heart." In the case of the lower class a stone of less value was employed.

321 ANCIENT

## TASSEL-SLIDE

CHINA

Dimensions: 1.25 × .59 inches. 3.2 × 1.5 centimetres. Weight: .453 ounce. 12.8465 grammes  
 Specific gravity: 2.9413; hardness: 6.5. *Nephrite*  
 Color: Grayish-yellow with markings of dead-oak-leaf on each end

A short tubular piece (like the Japanese *kudatama*) with three longitudinal ridges, used probably as a slide on a string of beads or on an ornamental tassel. It is classed by the Chinese as a tomb piece.

The material is translucent and compact, but very much fractured at the ends, where there is a rich reddish-brown staining due apparently to contact with hydrous brown oxide of iron, or to weathering.

<sup>1</sup>The winged fish-dragon is often alluded to in legends, one of which relates that the sturgeon of the Yellow River, which makes the ascent of the stream each year, in the spring, becomes transformed into a dragon if it succeeds in passing the rapids of the famous gorge called *Lung Mên*, the Dragon's Gate. This transformation has become

typical of the success of graduates at the literary examination and of their names being included in the "Dragon List," as the published roll is called.

<sup>2</sup>The Fundamental Principles of Old and New World Civilizations, Cambridge, Massachusetts, 1901.



322

ANCIENT

ORNAMENTED CELT (*Hua Chan*)

CHINA

Dimensions:  $8.5 \times 3.47 \times .41$  inches.  $21.6 \times 8.8 \times 1.0$  centimetres. Weight: 15.533 ounces. 440.350 grammes  
Specific gravity: 2.9506; hardness: 6.5. *Nephrite*  
Color: Light gray with stainings of light brown to very dark brown, almost black; the upper end a light brownish-gray

A large flat celt, perforated with two holes and covered with a carved decoration of mythological character, the lower fourth only being left plain.

It is of general oblong shape, with rounded corners, but with the two sides gradually tapering toward the butt or head, and one side longer than the other so as to project slightly at the top and bottom and make a curiously irregular outline. The perforations are in the median line of the piece, arranged vertically, one close to the head, the other about an inch below. Each is encircled on both faces with a ring carved with wavy lines, forming a sort of rope-like pattern. The unornamented lower end is ground to a sharp curved edge, and the free border is slightly incised with a band of interrupted rectangular fret reaching down on either side as far as the carved decoration of the two faces. This is in three horizontal broad bands identical on both faces. The upper and lower bands are filled with a fret ground of spirally curved lines called *lei wen*, or "thunder-scroll," by the Chinese. The broad central band is carved with the conventional outlines of the gluttonous ogre called *Pao-tieh* by the Chinese, with mouth gaping so as to show a fang projecting on each side, and the scroll-like lineaments of the face standing out in slight relief from a background incised with a field of the same rectangular fret-pattern as that around the border.

This, no doubt, figures the all-devouring storm-god of the Chinese, with a background of clouds. The scrolls indicate thunder (*lei*). The ancient hieroglyph representing this was composed originally of a cross with the four ends terminating in spiral curves. The Chinese believe that bronze vessels were first cast by their old sovereign Yü the Great (2205–2198 B. C.), and moulded by him with the forms of the storm-gods of the hills and the waters, so that the people might recognize their dreaded features and avoid them.

The decoration of the celt is archaic in character and the work is

well finished. It may have been intended for a votive offering to a temple of the thunder-god, who was more worshipped in early days in China than he is now.

The material is translucent to subtranslucent, and appears homogeneous and compact. Microscopically, it is a good example of amphibole alteration. It is a confused aggregate of amphibole fibres with a small amount of colorless jadeite in fan-shaped aggregates.

Clarke's reduction of Walden's chemical analysis here given shows the presence of 21.80 per centum of serpentine and 7.15 per centum of jadeite:

		Jadeite?	Serpentine?	Nephrite	Un- accounted for
Silica . . . . .	52.98	4.25	9.48	39.25	
Alumina . . . . .	1.79	1.79			
Ferrie oxide . . . . .	.05				.05
Ferrous oxide . . . . .	.46			.46	
Manganous oxide . . . . .	.05			.05	
Magnesia . . . . .	25.49		9.48	16.01	
Lime . . . . .	13.39			13.39	
Soda . . . . .	1.11	1.11			
Potash . . . . .	.71			.71	
Water . . . . .	3.50		2.84		.66
	99.53	7.15	21.80	69.87	.71

Abstract	
Nephrite . . . . .	69.87
Serpentine? . . . . .	21.80
Jadeite? . . . . .	7.15
Unaccounted for . . . . .	.71
	99.53

323

ANCIENT

DECORATED CELT (*Yao Chan*)

CHINA

Dimensions:  $2.62 \times 1.38 \times .28$  inches.  $6.7 \times 3.5 \times .7$  centimetres. Weight: 1.448 ounces. 41.063 grammes  
Specific gravity: 2.9597; hardness: 6.5. *Nephrite*  
Color: Sage-green and brown

A small perforated celt with slightly tapering sides, and straight butt with rounded corners. One face is perfectly flat, the other has a bevelled cutting edge, and is slightly bevelled at the shoulders. It has been perforated near the top for use as an amulet, and bears an engraved inscription, the two characters on the obverse being *Hua-*

*Shih*, and the two on the reverse, *Shêng Chun*. This means, "May the Hua family flourish like spring!"

This is a good example of an ancient celt engraved with a personal inscription to bring good luck to the family of the possessor.

324

ANCIENT

SMALL CELT (*Hsiao Chan*)

CHINA

Dimensions:  $3.06 \times 1.28 \times .28$  inches.  $7.8 \times 3.2 \times .7$  centimetres. Weight: 1.467 ounces. 41.595 grammes  
Specific gravity: 2.9420; hardness: 6.5. *Nephrite*  
Color: Faint gray with dead-oak-leaf staining

A small polished celt perforated for use as an amulet. It is oblong in form, has rounded corners and bevelled rim. One face is perfectly flat, the other has a bevelled cutting edge.

In Burma as well as in southwestern China, such amulets are supposed to make the wearer invulnerable.



325 ANCIENT

SACRIFICIAL TABLET (*Kuei Pi*)

CHINA

Dimensions:  $7.56 \times 4.5 \times .56$  inches.  $19.2 \times 11.4 \times 1.4$  centimetres. Weight: 13.429 ounces. 380.705 grammes  
 Specific gravity: 2.5842; hardness: 5.0. Called *yü* by the Chinese  
 Color: Yellowish-white obscured over a large area by a warm reddish-brown passing into darker shades

A sacrificial tablet roughly carved and ancient in appearance. It consists of a *kuei* or sceptre with pointed head projecting from behind a rounded medallion called *pi*. In use it would be held in both hands with the pointed end projecting upward.

The base is carved in slight relief with a floral pattern, the upper part surrounded with a design of two interlacing dragons, carved in openwork on the parts which project on either side, in slight relief on the two faces of the tablet.

The obverse face has the form of the *kuei*, which projects vertically in the middle, carved in relief with five bats flying in the midst of clouds, and surrounded by a raised rim. The bats are symbols of the five kinds of happiness. The sides of the *pi*, encircled also by a raised rim, are carved in relief with four characters in archaic script, — *shang*, "above"; *hsia*, "below"; on the right, *ch'ien*, "thousand," and on the left *ku*, "ancient,"—meaning "The Thousand Ages of the Above and the Below," that is, of heaven and earth.

The reverse face has the medallion-like surface of the *pi* covered with nodules, and bounded inside and out by circular rims.

The nodules are supposed by some to represent grains of rice. The round countersunk centre indicates its original pierced hole.

The upper part of the *kuei*, which projects at the top, has upon it a constellation of seven stars connected by straight lines, executed in slight relief, figuring the Great Bear, the abode of the Taoist divinity, Yü Hwang Shang Ti.

The material of this beautiful russet-stained piece is translucent and has a very compact sinewy structure. It is classed by the Chinese as *yü*, the term usually translated "jade" by foreigners. When the tests of Western science are applied to it, however, it is found not to be jade as we understand the term, but bowenite, a compact variety of serpentine that at one time was, and still sometimes is, confounded with the nephrite variety of jade.

The hardness of this specimen is only 5 instead of 6.5; and its specific gravity only 2.5842 instead of 2.9+.

These scientific facts would in no way lessen a Chinese connoisseur's appreciation of the specimen. On this account it is retained in the Collection.

326 ANCIENT AMULET (*P'ei Ching*)

CHINA

Dimensions:  $2.22 \times 1.19 \times .31$  inches.  
 $5.6 \times 3.0 \times .8$  centimetres.  
 Weight: .982 ounce. 27.8523 grammes  
 Specific gravity: 2.9247; hardness: 6.5. *Nephrite*  
 Color: Black with some grayish-green markings near the cutting edge

An amulet in the form of a celt, ornamented on top with a crouching lion carved in relief, and pierced for suspension.

327 GONG (*Ch'ing*)

YUAN-TING (116-111 B. C.)

CHINA

Dimensions:  $10.62 \times 8.34 \times .5$  inches.  
 $27.0 \times 21.2 \times 1.3$  centimetres.  
 Weight: 3 pounds 5.500 ounces. 1516.710 grammes  
 Specific gravity: 2.9957; hardness: 6.5. *Nephrite*  
 Color: Light green obscured over large areas by chalky and pinkish cloudings

A large flat gong resembling in outline the longitudinal section of a bell, with a handle at the top perforated for suspension.

This handle, of regular quadrangular outline, ornamented below with scrolls surrounding the central aperture, which is oblong in shape with scrolled border, has on either side of it the figure of a phoenix, of archaic design, carved in openwork.

The two faces of the gong are decorated with similar designs, arranged in three bands, separated by two fillets, carved in slight relief, so as to encircle the whole gong. The upper band is filled with the winged head of a monster, with fangs projecting from the gaping mouth. This is the conventional outline of the devouring ogre of the storm called *Fao-t'ieh*. The lower band is carved with a scrolled pattern of foliated outline extending round the sides. The middle band is occupied by the eight mystic diagrams of ancient Chinese philosophy and divination. They project in slight relief from a plain background, four being represented on the obverse, the other four on the reverse.





The upper border of the handle is engraved with four Chinese characters, in the antique style of the period, which are read from right to left, *Yuan-ting nien chih*, and mean, "Made in the period Yuan-ting." The corresponding part of the handle on the reverse side has been sliced away for analysis, and the section exhibits a marked contrast between the hard translucent substance of the interior and the softened discolored surface, which has the aspect of steatite, and is almost chalky in some parts, the result of disintegration while buried.

This is a striking specimen of the class of "tomb jades" of the Chinese antiquary, changed, as described above, from having been buried for a long time in the ground. The decorative details are all in the antique style of the Han dynasty as seen on tombstones and bronze-work of the period. It must have been used originally in some Taoist temple. The period Yuan-ting, which extended from 116 to 111 B. C., was the fourth change of title of the reign of the third emperor of the Han dynasty, the "warlike" Wu Ti (140-87 B. C.). He is recorded as having been an ardent devotee of the Taoist religion.

The *pa kua*, or "eight diagrams," figured on this piece are of very ancient origin in China. They are said to have been discovered inscribed on the back of a supernatural animal called the dragon-horse, which rose out of the water of the Yellow River in the time

of Fu-hsi, the legendary founder of the Chinese polity, who is supposed to have flourished from 2852 to 2738 B. C. The diagrams, arranged and explained by Fu-hsi, were the basis of ancient systems of philosophy and divination during the centuries preceding the era of Wên Wang (twelfth century B. C.). This sovereign, during his imprisonment by the tyrant Shou, devoted himself to a study of the diagrams, and appended to each a short explanatory text. These explanations, with additional observations attributed to his son, Chou Kung, the famous Duke of Chou, constitute the "Chou Yi," the "Book of Changes of the Chou Dynasty," which, with a commentary added by Confucius, forms the "Yi Ching," the most venerated of the Chinese classics. In the system the extreme point, or "spatial atom," which is a mere speck, carried out, produces a line; that line, extended and separated, produces two, represented severally by a whole line, the male energy or principle, and a divided line, the female principle; these lines, doubled and interchanged, produce four; and trebled, eight, which are the "eight diagrams." These constitute the elements of all metaphysical knowledge, as well as a clue to the secrets of nature and of being. A ceaseless revolution is held to be at work, in the course of which the various elements or properties of nature, indicated by these diagrams, mutually extinguish and give birth to each other, thus producing the phenomena of existence.

328

HAN DYNASTY (206 B. C.-220 A. D.)

LIBATION-CUP

CHINA

Dimensions: 7.91 × 3.91 × 3.16 inches. 20.1 × 9.9 × 8.0 centimetres. Weight: 1 pound 4.625 ounces. 584.733 grammes  
Specific gravity: 2.9587; hardness: 6.5. *Nephrite*  
Color: Light gray thickly permeated with white and dark brown spots, and almost brown veinings

A sacrificial cup of antique design, perfectly modelled and polished and carefully finished in every detail.

The body, of slightly bulging oval form, is firmly poised upon a foot of the same oval outline, which springs from its base and spreads out a little below. It curves inward above toward the rim of the cup, which stretches up to make a broad lip opposite the handle.

The handle, of solid form and semicircular looped outline, is carved at the top in the shape of an animal's head with prominent eyes and large erect ears, intended to represent a rhinoceros.

The decoration of the cup consists of two horizontal bands of similar design, one round the body, the other encircling the foot. These bands are carved in slight relief with a regular geometrical pattern composed of interlacing straight lines interspersed with dots. They are arranged so as to form a brocade with a diamond ground beaded at regular intervals.

The primitive character of the ornament and the graceful curves of the archaic form combine to show the antiquity of this rare ob-

ject. The surface of the stone, moreover, is disintegrated in several places, indicating that it must have remained a long time buried under the ground.

The material is subtranslucent. Two thin sections of a thin oval ring-like slice which had been removed for the purpose from the base of the foot were studied microscopically by Professor Iddings, who describes it as a good example of amphibole alteration. It is a confused aggregate of amphibole fibres which, on account of the thickness of the rock-sections, exhibit rather high interference colors. The index of refraction, however, is that of amphibole. There is a curved parting to the mass, and the appearance of rounded aggregates of colorless material in a gray matrix. This suggests the grain of the original pyroxene rock. A few fragments of colorless jadeite remain. There are a few curved and distorted microscopic crystals of colorless mica or muscovite. One of the sections might be described as a jadeite consisting almost wholly of jadeite, with few individuals of the colorless indeterminable mineral.

329

HAN DYNASTY (206 B. C.-220 A. D.)

ARMLET (*Cho-tzu*)

CHINA



Dimensions: 4.94 × .31 inches. 12.5 × .8 centimetres. Weight: 3.054 ounces. 86.586 grammes  
Specific gravity: 2.9385; hardness: 6.5. *Nephrite*  
Color: Light greenish-yellow clouded with brown and encrusted upon one side with dead-oak-leaf

A circular armlet of solid form decorated in relief outside with a pair of dragons of archaic design with flowing manes, wavy serpentine bodies, recurved claws, and curling tails. The small interval is filled in with a scroll of cloud.

The material is translucent on the light-colored unweathered side of the piece.



330

ARCHER'S THUMB-RING (*Pan Chih*)

HAN DYNASTY (206 B. C.-220 A. D.)

CHINA

Dimensions:  $1.16 \times 1.03$  inches.  $2.9 \times 2.6$  centimetres. Weight: .809 ounce. 22.946 grammes  
 Specific gravity: 2.9896; hardness: 6.5. *Nephrite*  
 Color: Gray clouded and veined with very dark brown

An ancient thumb-ring differing somewhat in size and form from the modern style. These rings were worn upon the thumb of the left hand, to protect it from being injured by the bow-string after the discharge of the arrow.

The material is translucent, compact and homogeneous in the mass, but much cracked and fissured; and into these cracks and fissures a brownish-black substance has penetrated. A fractured part shows its splintery structure.

Studied microscopically this is seen to be a good example of the amphibolic alteration of jadeite. It consists of microcrystalline to microcryptocrystalline aggregations of colorless fibres and flakes or scales having a confused arrangement which in places approaches a definite grouping. The crystals exhibit distinct prismatic amphibole cleavage in cross-section and are sometimes automorphic in prism zone. Through the mass are scattered fragmentary highly striated crystals of colorless jadeite bordered and traversed by amphibole, sometimes oriented parallel to the jadeite, sometimes not. Clarke's reduction of Walden's analysis here given shows that jadeite is present to the amount of 4.15 per centum.

Silica . . . . .	57.02	Jadeite	Nephrite
Alumina . . . . .	1.05	2.47	54.55
Ferrie oxide . . . . .	1.05	1.05	
Ferrous oxide . . . . .			.55 ?
Magnesia . . . . .	23.01		.50 ?
Lime . . . . .	14.77		23.01
Alkalis . . . . .	undet.	Na <sub>2</sub> O .63 ?	14.77
Water . . . . .	3.00		.95
	99.90	4.15	94.33

Abstract	
Nephrite . . . . .	94.33
Jadeite . . . . .	4.15
Excess water . . . . .	2.05
	100.53

Jadeite is assumed to be proportional to alumina, and the undetermined soda is calculated to correspond. Ferrous and ferrie oxide not separated by the analyst.

331

ANCIENT SIGNET (*Kang Mao*)

HAN DYNASTY (206 B. C.-220 A. D.)

CHINA

Dimensions:  $2.0 \times .62$  inches.  $5.1 \times 1.6$  centimetres. Weight: .985 ounce. 27.930 grammes  
 Specific gravity: 2.9309; hardness: 6.5. *Nephrite*  
 Color: Light sage-brown with a pronounced staining of brown

An octagonal cylinder pierced through the middle to be strung by a silk cord to the girdle of an official of the Han dynasty, engraved with an inscription in the ancient style of the period.

Those worn by princes and nobles are described as being of white jade; those worn by officers with an annual stipend of two thousand to four thousand piculs of rice were of black rhinoceros horn, while officers of lower rank, private scholars and students, used signets of ivory. They were made on the cyclical day *mao* of the first moon, and were called *kang mao*.

The inscription on this specimen is as follows:

May this amulet of the day *mao* of the first moon  
 With miraculous power pervade the four quarters,

That the red, blue, white, and yellow,  
 All four colors may be duly harmonized.  
 May the charm recited by imperial order,  
 To instruct the dread monsters and dragons,  
 Be efficacious in all dangerous diseases,  
 Which I could not dare to withstand.

The material is translucent, homogeneous and very compact, and on the fractured parts shows the characteristic splintery structure of nephrite.

Microscopically it is found to be a transition from the peculiar aspect shown by those specimens which exhibit the patchy structure characteristic of amphibolic alteration into a uniform aggregation of minute fibres approaching closely to compact amphibole.

332

GIRDLE-ORNAMENT (*P'ei*)

HAN DYNASTY (206 B. C.-220 A. D.)

CHINA

Dimensions:  $6.97 \times 2.41 \times .62$  inches.  $17.7 \times 6.1 \times 1.6$  centimetres. Weight: 6.132 ounces. 173.859 grammes  
 Specific gravity: 2.9960; hardness: 6.5. *Nephrite*  
 Color: Dark sage-green with dead-oak-leaf

An openwork carved ornament of elongated oval outline and flattened form, with rounded outer surface, shaped somewhat like the frame of a buckle; carved in openwork relief with dragons coiling round the frame, of the one-horned kind, with bifid spreading tails and retracted claws, known as *ch'ih-lung*, the lizard-like monster represented on old bronzes. There are two full-grown dragons in front and one smaller one in the upper right-hand corner behind, representing the parent monsters guarding their young, a motive used

from time immemorial in China for the decoration of the girdle. It is known by the name of *Tsang lung hsün tzü*, "The celestial dragons guarding their young." Round the hole pierced at the top for suspending the appendage by a cord, the surface is lightly engraved with a simple scroll design to indicate clouds.

From its form this ornament would seem to have been fashioned out of a celt. The carving is well modelled and of the style of the Han dynasty.



333  
334TWO SQUARE SEALS (*Fang Yin*)

CHINA

HAN DYNASTY (206 B. C.-220 A. D.)

Dimensions: 333=3.25 × 3.25 × 2.88 inches. 8.2 × 8.2 × 7.3 centimetres. Weight: 2 pounds 5.122 ounces. 1052.391 grammes  
 334=3.25 × 3.25 × 2.88 inches. 8.2 × 8.2 × 7.3 centimetres. 2 pounds 6.373 ounces. 1087.880 grammes  
 Specific gravity: 2.8278; hardness: 6.5. *Nephrite*  
 Color: Sage-green

A pair of large square seals which from the character of the designs on them, and the antique style of the inscriptions, are attributed to the Han dynasty.

The four sides of both pieces are decorated with dragons in slight relief having bodies terminating conventionally in ornamental scrolls. The shoulders, which recede as they slope upward, are engraved all round with two bands of interrupted rectangular fret, and each is mounted with a square button, the upper surface of which is also decorated with a square dragon in slight relief, like those on the sides.

The inscription on No. 333, engraved in slight relief on the lower surface, consists of four characters in antique script, and would be reversed when impressed with vermilion in the usual way. The impression is read, beginning at the upper right-hand corner, *Pi té ch'í lu*,

which means: "May high rank be attained." That on No. 334 reads: "To be preserved by sons and grandsons."

Each block is perforated through the shoulder for the insertion of a cord. They have both been chipped and mended at the edges, and the lines of junction are ingeniously filled in by a coating of reddish-brown plaster.

Such seals as these are attached in China to authenticate autograph writings and documents of various kinds. The one used would be generally appended to another seal bearing the name and rank of the owner.

The material has been much disintegrated by the action of fire, which has changed some parts to an impure opaque white. Originally it included splashes of lighter colored nephrite.

HORN-SHAPED CUP (*Chüeh Pei*)

335

T'ANG DYNASTY (618-906 A. D.)

CHINA

Dimensions: 3.78 × 2.75 × 2.16 inches. 9.6 × 7.0 × 5.5 centimetres. Weight: 6.388 ounces. 181.109 grammes  
 Specific gravity: 2.9937; hardness: 6.5. *Nephrite*  
 Color: Light sage-green mottled with lighter spots and stained and encrusted in part with patches of dead-oak-leaf

A cup carved in the form of a horn, with the tip curled round and engraved with spiral lines. The rim is encircled with a continuous band of rectangular fret. The convexity is decorated with the horned head of an animal surrounded by a wavy pattern of scrolled clouds which extends freely all round so as to cover the whole of the exterior of the cup.

The piece was evidently made out of a small boulder, one half of which was much weathered and stained. Scattered throughout the green portions are many inclusions of a yellow-white cleavable and not very fibrous mineral, and at one side is a bit of veined agate four millimetres long and two millimetres wide.

336

LOTUS-LEAF CUP (*Ho-yeh Pei*)

T'ANG DYNASTY (618-906 A. D.)

CHINA



Dimensions: 6.84 × 4.41 × 3.06 inches. 17.4 × 11.2 × 7.8 centimetres.  
 Weight: 1 pound 1.516 ounces. 496.580 grammes  
 Specific gravity: 2.9629; hardness: 6.5. *Nephrite*  
 Color: Yellowish-gray with lighter markings and veins of dark brown

A large tall cup of ovoid shape and oval section, modelled in the shape of a lotus leaf, turned up so that the edge of the leaf folds round to make the rim of the cup. This rim is irregularly convoluted and gracefully recurved at the margin. The leaf is carved outside with the natural veins indicated in slight relief, and the round stalk curves up from beneath to form the handle. Outside, near the top, on one side is executed in bold relief the figure of a fish swimming with a lotus bud in its mouth, and on the other side that of a flying bat, both undercut, and with the details of the carving carefully finished.

The cup is of charming natural design and finely polished both inside and out.

The material is translucent and much fissured, and shows many veinings that are brown by infiltration of some kind, perhaps while buried. Under the microscope it is seen to be a nearly uniform mixture of amphibole fibres which are in fan-shaped divergent clusters, sometimes approaching a spherulitic arrangement.



337



LOTUS-LEAF VASE (*Ho-yeh P'ing*)  
ABOUT THIRTEENTH CENTURY

CHINA

Dimensions: 6.22 × 5.12 inches. 25.8 × 13.0 centimetres.  
Weight: 4 pounds 4.787 ounces. 1950.070 grammes  
Specific gravity: 2.9466; hardness: 6.5. *Nephrite*  
Color: Greenish-gray mottled with lighter tints, and some veinings of brown

A bold vigorously carved vase of complicated form and openwork design, consisting of a large rolled-up lotus leaf bound with reeds into a bundle with other leaves, flowers, and fruit.

The large leaf is carved outside with the natural veins executed in slight relief, and also with the linear leaves of the reed, which wind round it and interlace at the back so as to bind it into the form of a vase. The stalk springing from its base is gathered into a bundle with several other stalks so as to form a firm pedestal for the vase. Two of these stems curve up in front, one of them bearing a full-blown blossom of the lotus, and the other a flower from which most of the petals have fallen, laying bare the pod or cup-shaped fruit and its seeds. These are carved in openwork and strengthened by being united by waving leaves of the same reed. At the back a small lotus leaf, a flower bud, and the hastate leaf of another water-plant rise from the reticulated base so as to surround the vase with a natural growth of vegetation.

The mouth of the vase, with its compressed many-lobed outline, is formed of the margin of the leaf folded irregularly and with the rim partially recurved in natural fashion.

The surface of the jade, which is of coarse, hard texture, and shows many minute veins and fissures, has been partially decomposed in some parts, giving it a very ancient appearance.

It is a remarkably bold and splendidly executed example of the jade-worker's skill, as well as of the adaptability of the material for bold treatment.

338

ABOUT THIRTEENTH CENTURY GIRDLE-APPENDAGE (*Niu-tzū*)

CHINA

Dimensions: 2.0 × 1.34 × 1.22 inches. 5.1 × 3.4 × 3.1 centimetres. Weight: 3.644 ounces. 103.320 grammes  
Specific gravity: 2.9342; hardness: 6.5. *Nephrite*  
Color: Gray veined throughout with brown and stained at one end with black

Small figure of a tiger of square solid form, with tail curled over its back and legs folded underneath. It is engraved on the forehead with the Chinese character *Wang*, "King," and is perforated through the middle for suspension like a Japanese *netsuké*.

The veined surface of the jade reminds one exactly of a piece of crackled celadon porcelain. This is described by T'ang Jung-tso as one of the varieties of tomb jade produced by an alteration of the surface of the mineral after it has been buried in the earth.

339

EARLY MING DYNASTY

WINE-POT (*Chiu Hu*)

CHINA

Dimensions: 7.88 × 6.94 × 2.44 inches. 20.0 × 17.6 × 6.2 centimetres.  
Weight: 1 pound 13.729 ounces. 842.835 grammes  
Specific gravity: 2.9604; hardness: 6.5. *Nephrite*  
Color: Translucent light gray with mottling of lighter and more opaque character, and veined with brown

A tall wine-pot of oval section modelled in a complex shape so as to look like a flattened tea-pot mounted upon a laterally compressed cylinder that forms part of the vessel which it supports. This is to enable the wine to be heated by putting the foot in hot water. There is a loop-handle, with projections at the top and bottom, attached to one side, a curved spout springing from the mouth of an inverted two-horned dragon's head on the other.

The Chinese term *chiu* here, and usually rendered "wine," is really a spirit distilled from grain, either rice or millet, and is not the fermented juice of the grape, though grapes of the first quality are produced in many parts of the country. This *chiu*, which is analogous to the Japanese *saké*, is always drunk hot, and without additions of any kind.

The surface of the vessel is covered with conventional floral scrolls of archaic design growing from a leafy vine with tendrils, all carved in relief. The mouth is circular and has a round upright rim into which the cover fits. This cover is decorated in relief with leafy scrolls like those on the wine-pot, and crowned by a floral knob.





340 PERIOD UNKNOWN

SACRIFICIAL VESSEL (*Yi Lu*)

CHINA

Dimensions:  $6.22 \times 4.0 \times 2.91$  inches.  $15.8 \times 10.2 \times 7.4$  centimetres. Weight: 1 pound .766 ounce. 475.320 grammes  
 Specific gravity: 2.9692; hardness: 6.5. *Nephrite*  
 Color: Light gray mottled and veined with dead-oak-leaf

A sacrificial vessel, modelled in the form of the ancient Chinese sacrificial bronze vessel called *yi*. It consists of a round bowl-shaped body standing on a solid ring-foot expanding slightly at the base, and is provided with two projecting loop-handles, somewhat reduced below, springing from the mouths of grotesque monsters above. The body is decorated in two bands. The upper band, engraved with scroll ornaments and foliated border encircling the concave neck of the bowl, is interrupted by six quadrangular projections. The two broad projections in the middle are carved in slight relief with monsters' heads like those on the handles. The narrower ones at the sides, which form short vertical ridges, are engraved outside with a double rectangular fret.



The band surrounding the lower convex surface of the bowl is carved with an interlacing floral pattern composed of sprays of bamboo intermingled with branches of the *Polyporus lucidus*, the sacred *ling-chih* fungus of the Chinese.

The inner surface of the vessel is encircled below the rim with a lightly engraved band of geometrical fret ornament.

The material is translucent, homogeneous, compact, and horn-like in texture, and shows a veined structure about parallel to the base of

the vessel. This veining is very marked, owing to the infiltration of the hydrous brown oxide of iron.

The piece has been only very slightly polished and is dull in lustre.

341 PERIOD UNKNOWN

ENGRAVED CELT (*Hua Chan*)

CHINA

Dimensions:  $2.88 \times 1.62 \times .25$  inches.  $7.3 \times 4.1 \times .6$  centimetres. Weight: 1.330 ounces. 37.703 grammes  
 Specific gravity: 2.9559; hardness: 6.5. *Nephrite*  
 Color: Pale green with a broad band of brown and black staining

A small thin celt, pierced for suspension as an amulet. In form it is oblong with rounded corners, the two sides tapering upward toward the butt. The rim is bevelled all round so as to be no sharper at the lower edge than elsewhere.

Both faces are carved in slight relief with decorative designs of archaic character. The obverse is filled with the features of the dreaded ogre called *Pao-tieh*, with the lower part of its face degraded into a conventional scroll of rectangular design. The reverse is carved with the lizard-like dragon of ancient bronze, with bifid tail, arched body, and a coil of clouds in front of its mouth.

The material is translucent, but has been rendered opaque in part by the application of staining matter, which has penetrated the mass to some depth.

342  
343  
344THREE SIGNETS (*T'u Shu*)

PERIOD UNKNOWN

CHINA

Dimensions: 342= $2.22 \times 1.03 \times .47$  inches.  $5.6 \times 2.6 \times 1.2$  centimetres.  
 Weight: 1.374 ounces. 38.947 grammes  
 Dimensions: 343= $1.22 \times .5 \times .5$  inches.  $3.1 \times 1.3 \times 1.3$  centimetres.  
 Weight: .486 ounce. 13.7875 grammes  
 Dimensions: 344=(broken). Weight: .266 ounce. 7.5385 grammes  
 Specific gravity: 2.8906; hardness: 6.5. *Nephrite*  
 Color: Pale green stained to a greater or less extent with black, an encrustation on No. 343 of dead-oak-leaf brown

Three signet cylinders of rectangular outline and square section, pierced through the middle for suspension. Carved in relief with similar inscriptions of ancient characters and divination diagrams, to be impressed on paper as talismans, or charms, used specially by Taoists.

No. 342 is modelled in the form of a double square cylinder, two, as it were, strung side by side, so as to have six free faces. The obverse is engraved with an inscription, in reversed form, of four characters, which would read when impressed, *Hsing yün lien hsiung*, meaning: "Stars and clouds alike propitious!" These characters are in the middle, and have above and below the round symbol (*yin-yang*), the diagram of the creative monad dividing into its male (*yang*) and female (*yin*) dual elements.

The reverse is boldly engraved with two lines of archaic script, the

impression of which reads: "May this confer abundant happiness, and a hundred benefits as gifts from heaven!"

The sides are carved with the diverse diagrams of ancient Chinese philosophy used in divination, including the round creative symbol and figures of the eight hexagrams (*pa kua*) variously arranged.

No. 343 is a four-sided cylinder with the same inscription, "Stars and clouds alike propitious!" engraved on the front and back, the *yin-yang* symbol on the two sides with four of the eight diagrams above and below.

No. 344 has the same inscription, but with one character on each of the four sides, which are, as it





were, truncated, so that there is hardly room left for the diagrams, which are very imperfectly represented at the top and bottom.

The material of the unstained parts is translucent; that of the stained parts is opaque. This opaqueness is no doubt due to absorption from without of some applied coloring matter. In order to determine this, one of the pieces, No. 344, was broken. It was found that the staining matter had penetrated the jade both exteriorly and

on the inner surface of the perforation to a depth of one half to one millimetre. Whether the staining was accidental or intentional is hard to determine. The amulet No. 341 is of the same material as these three pieces and is similarly stained. The breaking of No. 344 also revealed the fact that the drilling had been done from opposite ends and that the drill-points had not met exactly in the centre.

## 345 PERIOD UNKNOWN

WINE-CUP (*Chiu Pei*)

CHINA

Dimensions:  $3.75 \times 3.34 \times 1.41$  inches.  $9.5 \times 8.5 \times 3.6$  centimetres. Weight: 4.898 ounces. 138.865 grammes  
Specific gravity: 2.9706; hardness: 6.5. *Nephrite*  
Color: Light gray permeated throughout with a staining of russet-brown

An ancient cup of rounded oblong form, with a ring-handle at one side surmounted by a grotesque winged head representing the conventional features of the devouring ogre. The material, which is translucent, homogeneous and compact, exhibits many veinings and seams filled with a yellow-brown infiltration which influences the hue of the whole piece. The bedded structure of the material is beautifully shown.

## 346

SACRIFICIAL VESSEL (*Chiu Kuan*)

EARLY MING DYNASTY (1368-1644)

CHINA

Dimensions:  $7.5 \times 3.25 \times 9.0$  inches.  $19.0 \times 8.2 \times 22.3$  centimetres. Weight: 3 pounds 6.748 ounces. 1552.1 grammes  
Specific gravity: 2.97; hardness: 6.5. *Nephrite*  
Color: Gray with black cloudings and veinings

A sacrificial wine-jug of upright quadrangular form and oblong section shaped with a prominent broad band round the middle and slightly projecting rims above and below, the rim round the lip being encircled with a carved band of continuous rectangular fret.

A scrolled handle projects on one side, and round it is coiled in open relief a boldly designed lizard-like dragon (*ch'ih-lung*), while a pair of the same archaic monsters with bifid tails project in bold

undercut relief on the opposite side under the lip of the jug, worked into an elaborate network with scrolled clouds so as to balance the handle of the sacrificial vessel.

The material appears to have undergone disintegration while buried in the ground, and the stains which follow seams in the stone seem to be also due to natural causes.

## 347 ANCIENT

CURVED BEAD (*Magatama*)

JAPAN

Dimensions:  $1.09 \times .88 \times .56$  inches.  $2.8 \times 2.2 \times 1.4$  centimetres. Weight: .591 ounce. 16.772 grammes  
Specific gravity: 3.3270; hardness: 7.0. *Jadeite*  
Color: Light emerald-green with dead-oak-leaf stainings

A solid comma-shaped *tama* or bead, pierced near the head for suspension as a pendant or as part of a necklace. The material is translucent, and is unique in being penetrated by acicular crystals of rutile or actinolite, probably the former. It is probably not of Japanese origin, as jade in any form is not known to occur geologically in Japan.

This "crooked" or curved form of bead seems to have been much used in early times with the *kudatama* or tubular bead to form necklaces, as well as for ornamental pendants. They are found only in

graves, and were made of rock-crystal and other precious stones, and occasionally of jade. They were usually, as in this case, ornamented across the head with two or three furrows which seem to radiate from the aperture at each side, the significance of which is not known.



Some have likened the *magatama* to the claw of a bear, and as the bear was a sacred animal with the Ainos or aboriginal inhabitants of Japan, it is possible that it played an important part in their religious ceremonies.



# ART OBJECTS

## HISTORICAL PERIOD

THE remainder of the Collection, which is comprised under the general heading of Art Objects, embraces all the many specimens of the several varieties of jade which have been artistically designed for ceremonial worship in temples or private shrines, for use in the studio of the artist or calligraphist, for the decoration of the cultured interior of the far Eastern virtuoso—for any of the manifold purposes, in short, for which the precious material has been utilized by the lapidary craftsman. He has occasionally lavished upon it the utmost resources of the glyptic art; as proved in China, by the graceful lines and perfect polish of a flower vase whose elegant shape emphasizes the limpid purity of the medium in which it has been lovingly and patiently carved; and in India, by the soft sheen of the surface of a perfectly rounded box which reflects and multiplies the rich effect of its jewelled decoration of rubies and emeralds deeply set in their soft-hued bed and bound with sprays of beaten gold.

The art objects of the historical period have been arranged and

described in the Catalogue according to their places of manufacture, as set out in the following table:

### 1. CHINA

- a.* Carved Jades.
- b.* Jewelled Jades.
- c.* Jade Flowers and Fruit.

### 2. INDIA

- a.* Carved Jades.
- b.* Jewelled Jades.

### 3. ANNAM

### 4. EUROPE AND NEW ZEALAND

Nineteenth-century Jades.

### 1. CHINA

The Chinese jades, which include all art objects from that country, with the exception of a few carved pieces which have been separated from the rest to be put among the tomb jades because they show signs of having been buried underground, form the great bulk of the Collection. They have been further classified, as far as possible, in chronological order in accordance with the following scheme, which gives a list of the dynasties and reigns that happen to be represented in the series:

#### CHINESE CARVED JADES

- a.* Han Dynasty (206 B. C.—220 A. D.).
- b.* Sung Dynasty (960–1278).
- c.* Probably before Ming Dynasty.
- d.* Ming Dynasty (1368–1644).
- e.* K'ang-hsi (1662–1722).

- f.* Yung-chêng (1723–1735).
- g.* Probably Ch'ien-lung or before.
- h.* Ch'ien-lung (1736–1795).
- i.* Chia-ch'ing (1796–1820).
- j.* Chia-ch'ing to Kuang-hsü (1796 to date).

#### CHINESE JEWELLED JADES

- a.* Wan-li (1573–1619 A. D.).
- b.* Ch'ien-lung (1736–1795).

#### CHINESE JADE FLOWERS AND FRUIT

- a.* Ch'ien-lung (1736–1795 A. D.).
- b.* Chia-ch'ing (1796–1820).



Subsidiary to the chronological order, there is a further arrangement of the art objects according to their material, the jadeites being placed first, the nephrites next; and the materials have, again, been generally ranked in a continuous gradation of colors, starting from the lightest through all the various intermediate shades to end in the darkest.

The Chinese jewelled jades, which are not so important or costly as the Indian jewelled jades of the magnificent Mogul period, are attributed to the long reign of the Emperor Ch'ien-lung, who reigned from 1736 to 1795, and lived four years longer after he had resigned the throne to his son. The one exception is the inlaid screen picture, No. 731, which has been illustrated by the artist Li in original water-colors for Volume I, and which is referred, for the reasons stated in the description, to the reign of Wan-li toward the close of the Ming dynasty. The jade flowers and fruit, which form the third subdivision of the worked jades of China, are also referred to

the reigns of Ch'ien-lung and of his successor Chia-ch'ing, who died in the year 1820. It may be stated here that the period to which a particular piece is referred in the descriptive part can only be taken as approximative when determined by the style of execution and other data; certainty is only claimed in the cases where an inscription is engraved the author of which is known, or in those which are authentically marked with the title of the reign or year in which they were actually fabricated. Objects of jade of Chinese manufacture are rarely inscribed with a date outside the Imperial workshops in the palace at Peking, so that the inscription of a "mark" under the foot of a piece may generally be taken to indicate that it was specially made for the use of the emperor whose reign is indicated. When the emperor himself has added an autograph inscription in verse and sealed it with his signet, all engraved in facsimile upon the piece, as Ch'ien-lung was fond of doing, several of his inscriptions being in the Collection, no higher authority could be desired.

## 2. INDIA

The worked jades of Indian manufacture are classified under two headings:

- a. Carved Jades.
- b. Jewelled Jades.

They are generally fashioned in nephrite, the solitary exception in the Collection being the jewelled butterfly, No. 781, which has been illustrated in colors in Volume I, with the Kleczkowski jewels from China, the wings of the butterfly being modelled in thin plates of brilliant emerald-green jadeite. Everything else is of nephrite, of varied tones of coloring extending from pearly white and white faintly tinged with green through many intermediate shades to deepest green and black. Some of the whites are unusually lustrous and compact in texture, and acquire a peculiarly soft sheen when finely polished, so as to form a matchless background for the display of the jewelled inlay which is one of the chief triumphs of the Indian craftsman. Another of the colors more frequently found in Indian nephrite than elsewhere is a sage-green of uniform shade and comparatively translucent body.

With regard to the date of the Indian art objects, they mostly belong to the period of the Mogul empire which ruled in India from 1526 to 1761 A. D. The majority are referred to the seventeenth century, which was occupied by the reigns of Jehanghir (1605-1627), Shah Jehan (1628-1658), and Aurangzeb (1658-1707). During the latter reign the French historian and philosopher of the period of Louis XV, François Bernier, who was called *le Mogol* by his contemporaries, lived several years at Delhi as court physician to the Mogul emperor, and noticed jade, under the name of *yascen*, as a precious stone of great hardness often carved in India into bowls and cups.

During the decline of the Mogul empire Delhi was twice sacked: first, in the year 1739, by Nadir Shah, who carried off an immense booty of artistic treasures with the Mogul regalia to Persia; on the second occasion, in 1756, by the Afghan Ahmad Shah Durani during his third invasion of India. The Afghans, after their conquest of northern India, entered into diplomatic relations with the Chinese who had recently annexed Eastern Turkistan, and it was at this time that so many pieces of Indian jade were imported into China and presented to the Emperor Ch'ien-lung, who often recorded the fact in autograph inscriptions engraved on the sides of bowls and sealed with his seal. The fine Indian bowl, No. 762, modelled in the form of a chrysanthemum and carved with decorative details derived from the same flower, with its Imperial Chinese inscription, dated 1770, cut in vertical lines of rhyming verse outside, is a notable example of this class.

Among other specimens of Indian carved jade of the seventeenth

century may be noticed several other bowls of varied shape; a shallow dish, No. 758, with slightly spreading rim, of such egg-shell thinness that print can be read through it; a fluted wine-cup, No. 755, with a loop-handle, of dainty design and translucent texture; a floral vase, No. 759, of peculiarly graceful form and perfect finish; a little ring-box, No. 760, designed as three plums on a leafy twig; a sage-green mirror-frame, No. 764, intricately carved in open fretwork patterns; and a very dark greenish-black sword-guard, No. 765, carved with dragons' heads.

The jewelled jades, which form the second division of art objects of Indian workmanship, are remarkable for the skilful grouping, as well as for the intrinsic value of the jewels devoted to their decoration. The surface of the jade having been lightly carved for their reception, the scintillating stones are embedded and secured by beaten gold, which defines their outlines, and is carried on further to complete and join the floral designs which compose the artistic decoration of the piece. Some idea of the brilliant effect and, withal, general harmony of the jewelled decoration can be gathered from the two colored plates in Volume I, in which a selection of seventeenth-century work is happily illustrated. The pieces illustrated, which have already been briefly described under "Jade in India" (Volume I, Part V), comprise a large oval box, a four-lobed box of white nephrite on a sage-green tray, a rose-water sprinkler, a bowl, two dagger-handles, and one of a pair of jewelled armlets. Among other pieces of the period in the Collection are: the beautiful jar and cover, No. 775, which is illustrated by a woodcut in Volume I; the dagger-handle, No. 773, with rubies, emeralds, and diamonds set in floral scrolls of conventional lilies; the round flat plate, No. 774, of translucent sage-green; the richly ornamented box and cover, No. 776, inlaid with two hundred and eight rubies and forty emeralds, the principal of which are cut *en cabochon* so as to stand out boldly in the floral sprays, outlined, as usual, with gold; and the circular dish, No. 780, attributed to Jehanghir, which is fashioned in dark seaweed-green nephrite shading into dark green, a rare color in Indian jade.

The worked objects referred to the eighteenth century testify to a period of waning art, during which stones of less value were employed with the more precious jewels to fill in the designs, and among those mentioned in the descriptions we find the turquoise, cat's-eye, coral, zircon, moonstone, topaz, and garnet. The jewelled butterfly with wings of jadeite, No. 781, which was referred to above, is composed of pearls, the principal one being a "grouped" pearl made up of seven coalescing pearls. No. 782 is an octagonal mirror, No. 783 an armlet of light-gray nephrite, No. 784 a sceptre with five radiating wing-like blades projecting from the head of light sage-green nephrite set with one hundred uncut garnets, and a silver-gilt handle



topped with pale-gray and hilted with greenish-black nephrite; No. 785, a dark sage-green dagger-handle richly inlaid with floral sprays in silver contrasting effectively with the dark background, and No. 786, a diamond-shaped box of seaweed-green etched with floral designs inlaid with hammered gold.

The remaining objects in the list, Nos. 788-795, which are referred to the nineteenth century, form a series of inlaid ornaments comprising pendants, thumb-rings, girdle-clasps or -buckles, and a jewelled vase of more modern style, which need not detain us further, as they are fully described in the Catalogue.

### 3. ANNAM

Indo-China is represented in the Collection by four important and valuable pieces which came out of the palace of the old emperors of Annam at Hué, where they were found after the occupation of that city by the French army in the year 1887, and subsequently taken to Paris. They are particularly interesting as relics of an ancient native dynasty of the far East, now under the dominion of France. There is no indigenous art in Annam, which derived what civilization it possessed partly from India, partly from China. The objects before us betray a strong Chinese influence both in form and decoration, and the jade is carved in detail in accordance with the canons of Chinese lapidary art.

The imperial girdle, No. 796, which has been well illustrated by a woodcut in Volume I, is a belt of ribbed and brocaded cloth of gold studded with eighteen jewelled medallions of brilliant green jadeite, and once figured as part of a costume the robes of which were modelled after the pattern of those of the Chinese emperors of the Ming dynasty—a costume retained in Annam, as well as in Corea, after the Manchu conquest of the Chinese empire, which brought in new fashions for China itself. The medallions with which the girdle is studded are carved with Chinese-like designs of imperial dragons in the

midst of scrolled clouds, and set in gold frames overlaid with a delicate Chinese appliqué design of floral scrolls and symbols mounted with pearls.

The elaborate screen-picture, No. 797, again, which is illustrated in pen-and-ink and described at length in these pages, is remarkable for the large size of the slab of jadeite on which the picture is engraved, as well as for the sumptuous richness of the mounting, which is inlaid with gold, ivory, nephrite, kingfisher's plumes and bright enamels, and set with all kinds of precious stones, so that it is a veritable microcosm of symbols of Chinese mythological lore.

The next number, 798, includes an oblong ink-stone of light-gray nephrite faintly tinged with sage-green, enclosed in a box of repoussé gold, and a carved horn mounted with an imperial five-clawed dragon of chased gold, strung by a silken cord, with tassels, for suspension from the girdle of the emperor, and hollowed out so as to hold a supply of water for the pallet. The gold box, which is chased round the sides with flowers and butterflies in Chinese style, is engraved on the top with an inscription of four stanzas of rhyming verse composed by the Emperor Gya-lung, showing that it once belonged to that sovereign, who reigned in Annam from 1802 to 1819 A. D.

### 4. EUROPE AND NEW ZEALAND

The art objects of worked jade comprised under this heading all belong to the nineteenth century. With regard to Europe, although, as we have seen, jade has been lately found *in situ* in more than one locality in Central Europe, and prehistoric weapons and implements of jadeite and nephrite have been often discovered among the remains of lake-dwellings in Switzerland, dug up from ancient tombs in Brittany and other parts of France and in southern Germany, and obtained, more recently, from the ruins of neolithic settlements in Crete and the eastern shores of the Mediterranean, yet jade never seems to have been employed in Europe as a material for artistic work; never, that is to say, until these latter years, since the discovery of nephrite in large masses in Siberia has revealed an inexhaustible supply of the mineral, which is imported into Russia to be fashioned into vases and other artistic shapes at the imperial lapidary works at St. Petersburg. A fine selection of these vases, modelled in classical lines by modern machinery, was exhibited, by command of the Czar, at the Paris International Exposition of 1900.

There are three objects of Russian workmanship in the Collection from this source, carved in brightly variegated shades of green, flecked with tiny specks of black due to inclusions of chromic iron, which distinguish Siberian nephrite. They comprise a plain shallow bowl, No. 806, which has taken a very brilliant polish and is remarkably sonorous; a miniature mammoth, No. 807, a carved boulder of nephrite shaded in rich oily greens of varied tone from the bed of the Onot River in Siberia, which was exhibited in the Paris Exposition of 1900; and a paper-weight, No. 808, fashioned in the size and shape of a Russian two-*funt* weight and marked 1899, the year when it was made at St. Petersburg from a block of Siberian nephrite of spinach-green color tinged with light gray and sprinkled with black spots.

The seven examples of modern French workmanship were mostly

carved at the private workshop of A. Berquin-Varangoz, the well-known lapidary at Paris. They were specially made for the purpose of showing the capabilities of the several varieties of jade as media for fine artistic work. Three of the most striking examples of the finished work have been illustrated in pen-and-ink. These are a statuette copy, No. 799, of the celebrated Venus de Milo now in the Louvre, cleverly carved out of a block of the lavender-colored jadeite, lightly flecked with white, which is supposed to come from Tibet, as stated in the mineralogical part in the description of No. 51, which is a section of the same block; a bonbonnière, No. 801, carved out of New Zealand nephrite of dark pear-leaf-green color and beautifully translucent body; and an elaborate paper-knife, No. 802, a fine example of modern glyptic work in jade, shaped out of a large boulder of brilliant seaweed-green nephrite sent from New Zealand to England for the Colonial Exhibition of the year 1886.

The last four pieces in the series, numbered 809-812, are examples of ornaments of New Zealand jade of more modern manufacture than the aboriginal implements and ceremonial objects from the same country which were described among the archaeological specimens. They are all made of nephrite and include an ear-drop (*kuru*), a pendant of beautifully translucent green tint, an ear-drop of spinach-green, and a large claw-shaped pendant (*kapehu*) of darker spinach-green color. The last piece, which is illustrated in pen-and-ink, is mounted in chased gold with a ring to be worn as an amulet. Ear-drops of the kind were much prized by the Maoris and handed down from generation to generation, and were often celebrated in their songs and stories. Their native name for jade is usually literally translated "greenstone," and we are told that the highest term of endearment a lover can apply to his sweetheart is *Kuru-tongarewa*—i. e., "Superb Greenstone Ear-drop!"



348 HAN DYNASTY (206 B. C.-220 A. D.)

BELL (*Chung*)

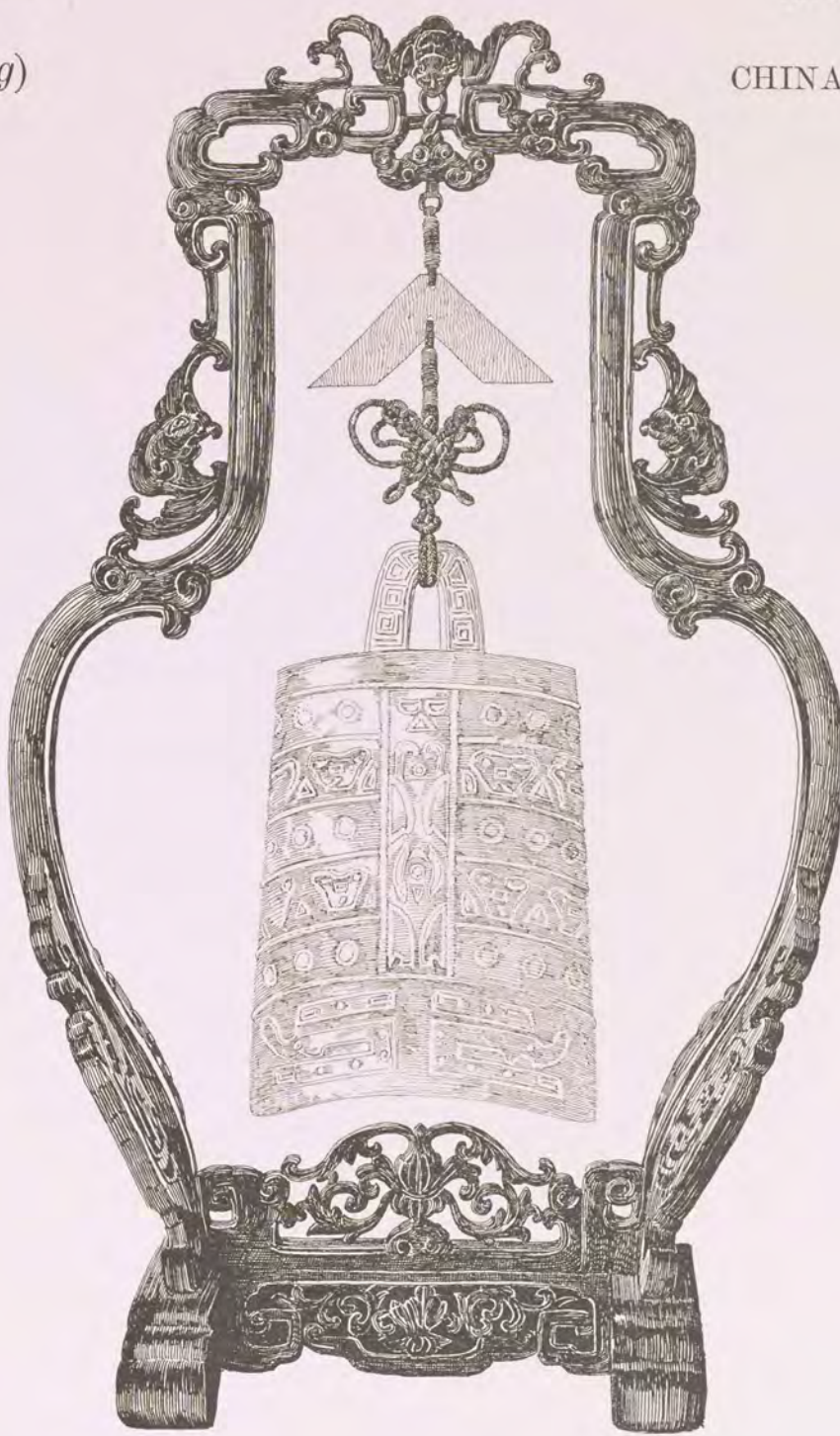
CHINA

Dimensions:  $7.12 \times 4.25 \times 2.62$  inches.  $18.1 \times 10.8 \times 6.6$  centimetres.  
 Weight: 2 pounds 3.874 ounces. 1017.020 grammes  
 Specific gravity: 2.9704; hardness: 6.5. *Nephrite*  
 Color: White with a light greenish tint and superficial stainings of dead-oak-leaf

A hanging bell, fashioned in the form of one of the bronze bells of the "Three Ancient Dynasties," of oblong shape, widening below, and oval flattened section with acute ends. A tall loop-like handle projects upward from the slightly convex upper surface, by which the bell hangs suspended from a frame while it is struck by a mallet upon the lower rim. The faces and sides of the loop-handle are engraved with bands of interrupted fret pattern, and the field of the upper surface of the bell is filled with a similar fret ground. The two faces of the bell, alike on the obverse and reverse, are carved in slight relief with horizontal bands enclosing rows of tubercles alternating with others ornamented with archaic scrolls. These horizontal bands are interrupted by a vertical band extending down the middle, also filled with archaic ornamental scrolls. The lower margins are carved, on both sides alike, with beaded rectangular scrolls, terminating outside in a pair of dragons' heads. A bell of this form is used, in company with a gong, in the worship of all Chinese temples, ancestral as well as Buddhist and Taoist.

The material of the bell itself is translucent to subtranslucent. The ring by which the bell is suspended has been stained a dull brown and seems to have undergone slight alteration. It is decorated on both sides with thunder-scroll.

The mount is modern.



349

BRUSH-POT (*Pi Tung*)

SUPPOSED TO BE OF THE SUNG DYNASTY (960-1278)

CHINA

Dimensions:  $3.66 \times 2.28$  inches.  $9.3 \times 5.8$  centimetres. Weight: 12.997 ounces. 368.480 grammes  
 Specific gravity: 2.9356; hardness: 6.5. *Nephrite*  
 Color: Inky-black intermingled in larger and smaller quantities with light gray

A miniature brush-pot of the usual cylindrical form, smoothly polished to exhibit the rare coloring of the material. The black and white are about equally balanced and distributed throughout, so as to present a marble-like appearance in both the outer and the inner surfaces of the cylinder. The black, of intense opaque tint, and the translucent light gray are separated by darker gray shades of varying intensity and partial translucency. Mottled jade of this kind is rare and is as highly prized by the Chinese connoisseur as *fei-ts'ui*.

The material is opaque where black, subtranslucent elsewhere. The markings on one side show that there is either a fracture or only

a partial discoloration, presenting very much the appearance of a ruin-agate where the various parts of the agate are severed.

This is one of the pieces which came into foreign hands at the loot of the Yuan Ming Yuan or "Imperial Summer Palace" at Peking by the Anglo-French forces in 1860.

The interior view of this piece shows that it was hollowed out by means of three different drills, the largest being forty-five millimetres in diameter, the next smaller being twenty-one millimetres, and the smallest eight millimetres. This is made very clear by the presence in the bottom of three circles one half millimetre deep.

350 SUNG DYNASTY (960-1278)

PERFORATED MEDALLION (*Pi*)

CHINA

Dimensions:  $3.06 \times .31$  inches.  $7.8 \times .8$  centimetres. Weight: 1.943 ounces. 55.112 grammes  
 Specific gravity: 2.9639; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A medallion pierced with a round hole in the form of the ancient *pi*, used for sacrificial offerings. On one side a pair of archaic dragons is projected in bold relief; the field of the reverse side is studded with four round points surrounded by light scrolls of conventional clouds.



351

WINE-JUG (*Chiu Kuan*)

PROBABLY BEFORE MING DYNASTY (1368-1644)

CHINA

Dimensions: 6.5 × 5.47 × 3.25 inches. 16.5 × 13.9 × 8.2 centimetres. Weight: 1 pound 11.139 ounces. 769.400 grammes  
Specific gravity: 2.9243; hardness: 6.5. *Nephrite*  
Color: Originally a light gray, as now existing in parts of the handle and mouth. By oxidization it has changed to a mottled darker gray and brown. In seams and fractures the corrosion has attained a deep dead-oak-leaf color

A jug with rounded body, spreading foot, and scroll handle, decorated with patterns of archaic bronze design. The swelling body, of oval section, is carved in slight relief with a broad band filled with the lineaments of the devouring ogre called *t'ao-t'ieh* so highly conventionalized as to look like leafy scrolls. The neck is encircled by a broad band of foliated outline and geometrical pattern. The handle, of scrolled shape, is surmounted by a dragon of the lizard shape (*ch'ih-lung*) coiling in clouds, carved in bold relief with openwork.



Beneath the lip on the opposite side stands out in marked relief the winged head of a two-horned monster with prominent eyes, and tongue projected so as to reach the neck of the vase below. Upon the loop thus formed hangs a movable ring.

The microstructure of this piece is clearly the result of amphibolic alteration of jadeite. It consists of a microcrystalline to microcryptocrystalline aggregation of fibres of colorless amphibole that extinguish light between crossed nicols in irregular patches, some of which are banded in parallel lines. These patches correspond to the originally twinned pyroxene. In places the amphibole is in compact crystals. There is also a mottling similar to that noticed in the large crystals of jadeite where it was the result of strain.

The analysis, with reduction by Clarke, is as follows:

	Jadeite, etc.	Nephrite	
Silica . . . .	56.91	9.17	47.74
Alumina . . . .	2.84	2.84	
Ferric oxide . . . .	1.56	1.56	
Magnesia . . . .	21.82		
Lime . . . .	11.56		
Soda . . . .	1.62	1.62	
Potash . . . .	1.19	1.17	
Water . . . .	3.07		.49
	100.57	16.36	81.61

Abstract

Nephrite . . . . .	81.61
R''R'Si <sub>2</sub> O <sub>6</sub> . . . . .	16.36
Excess water . . . . .	2.58
Potash unaccounted for . . . . .	.02
	100.57

The pyroxene molecule here represents jadeite, AlNaSi<sub>2</sub>O<sub>6</sub>, and ægirite, FeNaSi<sub>2</sub>O<sub>6</sub>, with potassium partly replacing sodium.

352

LION (*Shih-tzu*)

PROBABLY BEFORE MING DYNASTY (1368-1644)

CHINA

Dimensions: 3.81 × 1.5 × 1.97 inches. 9.7 × 3.8 × 5.0 centimetres. Weight: 12.371 ounces. 352.727 grammes  
Specific gravity: 3.3256; hardness: 7.0. *Jadeite*  
Color: Light lilac mingled with a dull greenish-gray and patches of lettuce-green

A paper-weight in the form of a grotesque reclining lion sporting with an embroidered ball. The chief beauty of the piece is its charming combination of colors—lilac, greenish-gray, and lettuce-green.

The material is translucent, homogeneous and compact, and probably came from Burma. Its crystalline structure can readily be made out by the aid of a pocket lens.

353

STORK WITH BRANCH OF PEACHES (*P'ai-tzu*)

MING DYNASTY (1368-1644)

CHINA

Dimensions: 3.59 × 1.25 × 2.25 inches. 9.1 × 3.2 × 5.7 centimetres. Weight: 5.350 ounces. 151.680 grammes  
Specific gravity: 3.3316; hardness: 7.0. *Jadeite*  
Color: White with bluish tint, stained in parts coralline red

An ornament in the form of a stork, the aerial messenger of the gods, resting with one foot on a rock and bearing in its beak a branch with two peaches—the Taoist emblem of marriage and of immortality.

The specimen was made apparently of a faintly blue stratified piece of jadeite with a layer of rich coralline red—evidently due to

the oxidation of the iron which the mineral contains—which has been skilfully utilized by the lapidary in tingeing the crown of the bird and the peach-blossom. The combination is unique. The material is translucent, homogeneous and compact, with finely granular texture.



354 MING DYNASTY (1368-1644) SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions:  $2.41 \times 1.06 \times .88$  inches.  $6.1 \times 2.7 \times 2.2$  centimetres. Weight: 2.511 ounces. 71.1758 grammes  
 Specific gravity: 3.3404; hardness: 7.0. *Jadeite*  
 Color: Very light greenish-gray with small patches of moss-green

A snuff-bottle, slender and graceful in form, highly polished but otherwise undecorated, and of very delicate coloration, the effect of which is heightened by the scattered line of dark-green, almost dendritic inclusions which runs round the piece for some distance.

355 MING DYNASTY (1368-1644) WATER-RECEPTACLE (*Hsi-tzū*)

CHINA

Dimensions:  $1.72 \times 5.75$  inches.  $4.3 \times 14.6$  centimetres. Weight: 14.483 ounces. 410.600 grammes  
 Specific gravity: 3.3291; hardness: 7.0. *Jadeite*  
 Color: Very translucent emerald-green, passing into lighter shades which lose themselves in masses of white snowy clouds tinged throughout with very pale amethyst; the whole effect being intensified by a few very dark green splashes on the rim, and by oxidized seams of russet crossing the bottom

A deep dish for holding water on a writer's or an artist's table. Of plain simple form, but perfectly and uniformly polished to show the vivid contrasts in the coloring of the material. It is modelled in the form of a deep circular dish, with gently flaring and plainly rimmed sides. It stands upon four broad but low feet of scrolled outline, engraved with spiral lines, which project slightly below. This is an exceptionally choice piece on account of the great beauty and variety of colors, and is one of the most interesting specimens in the Collection.

When a strong light is allowed to pass through the piece, it is shown to have almost the appearance of ruin-agate, and the whole mass appears as if broken up and penetrated by a more transparent variety. The absence of decoration is no doubt intentional on the part of the lapidary, who was unwilling to mar the harmonious effect of the beautiful variegated colors.

356 SMALL QUADRANGULAR VASE (*Hsiao Fang P'ing*)

MING DYNASTY (1368-1644)

CHINA

Dimensions:  $3.5 \times 1.53 \times 1.44$  inches.  $8.9 \times 3.9 \times 3.6$  centimetres. Weight: 8.286 ounces. 234.900 grammes  
 Specific gravity: 3.3188; hardness: 7.0. *Jadeite*  
 Color: Light lavender-gray of various shades, with splashes of bright lettuce-green on one side and a few oxidized veinings of russet-leaf on two others

A small quadrangular vase lobed at the corners exteriorly, but cylindrical within, resting on four low fungoid feet, and decorated on two opposite sides with incised jagged peaks and sprays of flowers. The

coloring is wonderfully varied and beautiful. At the lower end of the piece there are some veinings that are more translucent than the rest of the vase.

357 MING DYNASTY (1368-1644) PENDANT (*P'ai-tzū*)

CHINA

Dimensions:  $2.59 \times 1.81 \times .25$  inches.  $6.6 \times 4.6 \times .6$  centimetres. Weight: 1.408 ounces. 39.927 grammes  
 Specific gravity: 3.3342; hardness: 7.0. *Jadeite*  
 Color: Emerald-green and an opalescent greenish-gray

An ornamental pendant carved in openwork with the design called by the Chinese *Yü Piao Lung Mén*—"Fish leaping the Dragon's Gate." It consists of a pavilioned gateway in Chinese style, standing in clouds, and a fish in the act of leaping from the waves. The allusion is to the common belief that those sturgeon which succeed in the third month in ascending the rapids at the defile in the course of the Yellow River through Shantung known as the Dragon's Gate become

fish-dragons, and it is said that those scholars who are lucky enough to catch a glimpse of a fish that has been thus transformed are certain to find their names in the "Dragon List"—the roll of successful graduates at the competitive literary examination which every candidate for office must pass as a first step. The design is thus emblematic of literary success.

The material is wonderfully pure and translucent.



358  
359

MING DYNASTY (1368-1644)

PAIR OF CUPS (*Ch'a Kang*)

CHINA

Dimensions: 2.38 × 2.78 inches. 6.0 × 7.0 centimetres. Weight: 358 = 4.366 ounces. 123.795 grammes  
359 = 4.387 ounces. 124.368 grammes

Specific gravity: 358 = 3.3266; hardness: 7.0. *Jadeite*  
359 = 3.3274; hardness: 7.0. *Jadeite*

Color: Emerald-green running to lighter tints, and a few light clouds of creamy white tinged with russet

A pair of cups of tall upright form, carved outside with a pair of dragons and a pair of phenixes, placed alternately, executed in slight relief and delicately finished. They are designed in antique style, the dragons with finely scaled serpentine bodies having their feet provided with three claws only. Each pair is separated by a forked cloud of simple outline above and below. These cups, of the shape called *kang* by the Chinese, are used for drinking the choicer kinds of tea. With a prominently rimmed foot below, they bulge outward

near the bottom to proceed upward till they terminate in plain thin rims at the mouth.

They are of the style used in the Imperial palace during the early part of the Ming dynasty, and are of special interest on account of their antiquity as well as for the delicate finish of their carved decoration. They formed part of the loot of the Summer Palace at Peking in 1860, and were taken to London, where they were purchased for this Collection at a later date.

360

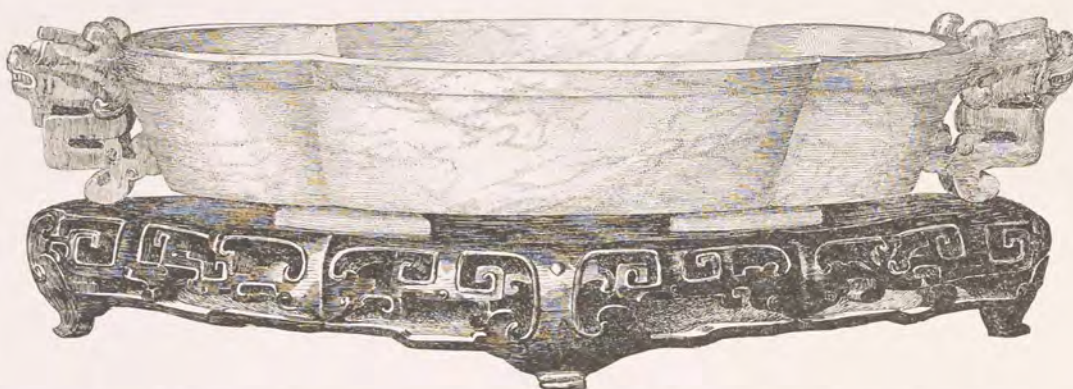
MING DYNASTY (1368-1644)

OVAL DISH (*Hsi-tzū*)

CHINA

Dimensions: 1.78 × 9.69 × 6.25 inches. 4.5 × 24.6 × 15.9 centimetres. Weight: 1 pound 14.022 ounces. 851.130 grammes  
Specific gravity: 3.3345; hardness: 7.0. *Jadeite*  
Color: Greenish-gray interspersed with emerald-green

A deep flat-bottomed dish, of indented oval outline, designed to hold water for the writing-table. It rests upon four low spreading feet of rounded section. The outline of the dish, which slightly swells upward, where it is defined by a plain band round the rim, is indented so as to form four lobes or undulations, which are separated inside by sharp vertical ridges. The two broad handles, which project at each end, are carved in openwork in the shape of two-horned monsters with huge heads, resting their horns on the rim behind so that the points project above it, and with their diminutive



bodies conventionally spreading in angular scrolls below. The bottom of the dish is decorated inside with a spray of begonia, with the leaves, flowers, and buds carved in bold natural relief and undercut. In addition to the charming effect of this as a floral decoration, it is useful as affording a rough surface and helping thereby to clear the ink from the brush.

It is a beautiful piece in form, color, and finish. When viewed through the side, the vein structure is very apparent. As an example of jadeite it is an exceedingly interesting and curious piece.

361

MING DYNASTY (1368-1644)

TRAY (*Hsi-tzū*)

CHINA

Dimensions: 6.03 × 3.5 × .69 inches. 15.3 × 8.9 × 1.8 centimetres. Weight: 9.410 ounces. 266.783 grammes  
Specific gravity: 3.3295; hardness: 7.0. *Jadeite*  
Color: Gray mottled with emerald-green and darker green

A shallow tray of octagonal outline, fashioned as a lotus leaf with the margin folded over at the two sides, the venation of the leaf engraved on the upper surface and executed in slight relief underneath. The base is carved in bold relief as a lotus flower, with the centre en-

graved with crossed lines surrounded by eight spreading petals. The middle of the dish has projecting from its surface a lotus thalamus, with the seeds visible at the top, encircled by a ring of short upright petals. Probably only a table ornament or an ink-rest.

362

MING DYNASTY (1368-1644)

PLUM-TREE VASE (*Mei Hua P'ing*)

CHINA

Dimensions: 4.72 × 5.22 × 2.75 inches. 12.0 × 13.2 × 7.0 centimetres. Weight: 1 pound 15.494 ounces. 892.845 grammes  
Specific gravity: 3.3316; hardness: 7.0. *Jadeite*  
Color: Light gray tinged throughout and mottled with blue, and marked with golden russet

A vase of bold design and primitive work, carved in the form of a blossoming trunk of the plum-tree, with two birds perched upon the branches. The gnarled trunk is carved outside with an irregularly knotted outline, and hollowed out inside so as to hold water, the rim of the mouth, of convoluted shape, being carved to show the concen-

tric rings of the wood. From the sides project several branches in strong openwork relief, sending out twigs in every direction so as to cover the surface of the trunk with flowers and buds. The petals are amber-tinted at the tips, advantage having been taken of the natural coloring of the crust of the jade. The birds are somewhat



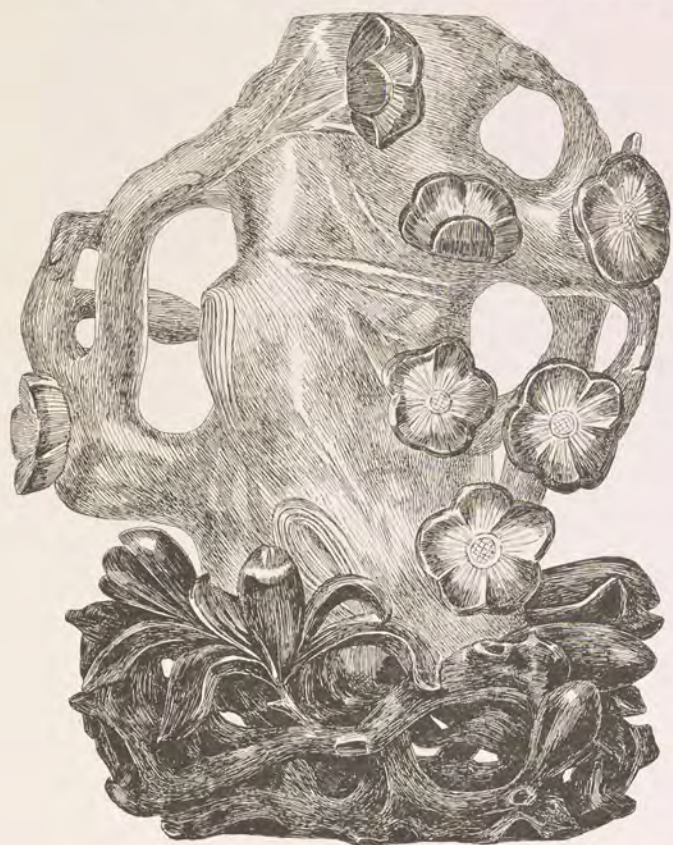
roughly executed, one placed near the foot of the trunk, the other perched upon one of the branches above. They seem from their forms and pose to be intended for a pair of magpies. The magpie, by a pun on its Chinese name, is taken as the "bird of joy"; the plum is a well-known emblem of flourishing old age, throwing out, as it does, blossoms from its leafless trunk before winter is over.

The jade of which this vase is composed is of especial rarity on account of the intense blue color and the beautiful weathering-marks, which are almost brown-amber. It is one of the choicest pieces of the Collection.

An examination of thin sections in the microscope shows the microstructure to be an aggregate of lath-shaped jadeite crystals with jagged outline and somewhat parallel arrangement. In places they are very minute and carry longer crystals of jadeite with no optical distinction; or, in other words, they give no evidence of having been strained. Part of the rock, however, shows signs of having been crushed and dragged. There is a little colorless mineral supposed to be albite.

Walden's analysis, with Clarke's reduction, gave the following:

		Jadeite	$R''_2R''(SiO_3)_4$	Unaccounted for	
Silica . . . . .	58.93	54.10	4.83		
Alumina . . . . .	25.39	22.99	2.05	.50	
Titanic oxide . . . .	.15				
Manganous oxide . .	trace				
Ferric oxide . . . .	trace				Abstract
Ferrous oxide . . . .	trace				Normal jadeite . . .
Magnesia . . . . .	.29		.29		Pseudo-jadeite . . .
Lime . . . . .	.72		.72		Unaccounted for . . .
Soda . . . . .	12.90	12.90			
Potash . . . . .	1.63	1.63			
Water . . . . .	.23			.23	
	100.24	91.62	7.89	.73	100.24



363 MING DYNASTY (1368-1644) GOURD-SHAPED VASE (*Hu Lu P'ing*)

CHINA

Dimensions: 5.19 × 5.78 × 2.44 inches. 13.2 × 14.7 × 6.2 centimetres. Weight: 2 pounds 8.477 ounces. 1147.510 grammes  
Specific gravity: 3.3265; hardness: 7.0. *Jadeite*  
Color: Apple-green with patches of translucent dead-oak-leaf

A solid low vase of compressed oval shape, vigorous design and bold openwork carving, fashioned in the form of a double-gourd, with branches of the gourd vine spreading freely over its surface. The cover of the vase is, as it were, the top of the gourd sliced off horizontally, the stalk to which the gourd is attached serving as the handle of the cover. The apex of the fruit, where the petals have fallen, is indicated by a few carved lines underneath. There are two branches of the vine, one springing from the stalk and passing down on the left, the other starting from the base of the vase on the left side and winding across the front. They are clothed in naturalistic style with leaves and tendrils, and each branch bears two smaller gourds which stand out in openwork relief on each side of the large gourd. A bat stands out upon one of the leaves in front, and another is represented with outspread wings clinging to the surface of the gourd behind. The bats are emblems of happiness, to supplement the symbolical attributes of the gourd as a special type of long life.

The material is translucent, homogeneous and compact, and finely crystalline for a jadeite. The piece is exceedingly interesting on account of the rich brown splashing on the top and sides, apparently discoloration of the original boulder. This brown discoloration is also present in the cover, suggesting that it was made from the same piece as the vase.



364 MING DYNASTY (1368-1644) VASE (*P'ing*)

CHINA

Dimensions: 4.81 × 3.06 × 1.97 inches. 12.2 × 7.8 × 5.0 centimetres. Weight: 1 pound .015 ounce. 454.032 grammes  
Specific gravity: 3.2328; hardness: 7.0. *Jadeite*  
Color: Lettuce-green mottled with opaque emerald-green and gray of various tones

A little flower-vase, modelled in the natural form of a growing cabbage, copied from the *Po ts'ai*, a tall upright variety of the vegetable much grown and highly appreciated throughout northern China, where it is commonly known as "Shantung cabbage." It is also a common motive for a flower-vase in some of the older classes of porcelain. The vase is carved with a cylindrical interior surrounded by leaves folded over in a natural way and so arranged that the front surfaces show the most vividly tinted portions of the jade. T'ang

Jung-tso, in his "Essay on Jade" in Volume I, alludes in his chapter on *fei-ts'ui* to melons and cabbages exhibited in the palace of the emperor.

The material of this piece consists of a mixture of what appears to be, when a strong light is allowed to pass through it, an emerald-green jadeite, but in reflected light is a lettuce-green color mixed with gray. The entire mass is finely veined, due probably to the weathering of the original mass.



## 365 MING DYNASTY (1368-1644)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions:  $2.38 \times 2.09 \times 1.22$  inches.  $6.0 \times 5.3 \times 3.1$  centimetres. Weight: 5.401 ounces. 135.120 grammes  
 Specific gravity: 3.2764; hardness: 7.0. *Jadeite*  
 Color: Very dark green mixed throughout with very light green crystalline reflections

A solid snuff-bottle of finely mottled dark-green jadeite, entirely undecorated, of the variety known among the Chinese as *pi-yü*, or "moss-green."

The use of snuff is comparatively recent in China, as tobacco was unknown in the Old World before the discovery of America. It seems to have been introduced into eastern Asia by the Spanish navigators of the sixteenth century, and the Emperor Wan-li (1573-1619) issued stringent edicts against the use of tobacco, showing him-

self as strong an opponent of it as his contemporary, James I of England. Yet little bottles of this peculiar form date much further back, and we have seen specimens in the pottery of the Sung dynasty, which ended 1278 A.D. They may be found in museums among Egyptian antiquities, labelled thousands of years B.C., but without authentic ground. In the older Chinese books they are described under the name of "medicine bottles," and they were much used in the old trade with the Mohammedan countries of western Asia for the carriage and preservation of valuable drugs.

## 366 MING DYNASTY (1368-1644)

CUP (*Pei*)

CHINA

Dimensions:  $2.03 \times 3.16 \times 3.88$  inches.  $5.2 \times 8.0 \times 9.8$  centimetres. Weight: 7.717 ounces. 218.777 grammes  
 Specific gravity: 2.6422; hardness: 7.0. *Jadeite-quartzite*  
 Color: Pellucid pinkish-white with a few golden-russet markings

A cup of charming natural design and perfect polish, fashioned in a somewhat irregularly rounded outline as if hollowed out of a knot of the plum-tree, the flowering branches of which are carved in relief with openwork to decorate its surface. A gnarled branch projects boldly to form the handle, and sends off twigs on either side covered with five-petalled blossoms and round swelling buds (no leaves) as the tree blossoms before the spring when its leaves first open. Upon the other side of the cup another flowering twig is seen sprouting as it were from the wood. On the portion of the surface unoccupied by flower-sprays two dragons are carved in high relief, one of these *ch'ih*, the lizard-like dragon of ancient bronze moulding, being larger than the other. Both are firmly modelled, instinct with life and movement. The smaller dragon and some of the flowers are coated with golden-russet, some of the integument of the mineral having been left to form an effective contrast to the pink matrix. The base of the cup is excavated so as to be surrounded by a rim of four-lobed outline, which is engraved in concentric lines so as to display the natural veining of the wood.

Pinkish-white jade is the most prized among the Chinese. Western mineralogists, however, hold that pink jade does not exist.

The material of this piece is translucent, homogeneous and compact, and has many of the appearances of jade. It has numerous rents and fissures, however, which are more characteristic of quartzite. Its hardness is 7.0, which is that of jadeite and of quartz; but its specific gravity is only 2.6422, which is much less than the minimum specific gravity of nephrite (2.90) and far below that of jadeite (3.20); while chemical analysis by Professor P. T. Walden of Yale University showed that it contains over 90 per centum of silicon dioxide, whereas jadeite never contains more than 60 per centum. Still some Chinese have selected this piece as the one most appreciated by them in the whole Collection. It is true that Chinese tests of jade are purely macroscopical. They know nothing of chemical analysis, or

of microscopical examination of thin sections, and it is quite possible that pieces with all the external appearances of being jade might in some instances lead them to wrong identification; but that would not interfere with their appreciation of the mineral.

T'ang Jung-tso, in the "Essay on Jade" in Volume I prepared specially for this work, says in his chapter on colors:

"The three colors, white, yellow, and green, are all highly valued. The white of fresh lard is the most valuable. . . . There is also a red jade, red as a cock's comb, which is considered the most valuable kind of all, but this kind of beautiful jade is of extremely rare occurrence. . . . In the present day the green and white colors are very common, and black is occasionally met with, but the red and yellow hardly exist; so that, even for the six vessels of sacrificial worship, it is impossible always to find genuine pieces."

In a later paragraph of the same chapter on colors, Mr. T'ang says:

"In the present day white is the color most sought after in jade, and modern amateurs of jade generally keep a set of patterns for comparison. These patterns are little oblong tablets carved out of the purest and finest jade, arranged according to their colors by a clever connoisseur, in a set of ten, numbered in correspondence with their respective values. Whenever a piece of jade is added to the collection, these patterns are brought out and compared with the color of the piece, so that it may be put into one of the ten classes. The rarest kind of all is white and translucent, like mutton fat, tinged with faint pink throughout, and this is called the tenth grade of the colors. This is, however, of the greatest rarity and very seldom seen, so that a dealer in jade, in his whole lifetime, may not succeed in getting a single specimen, and should one piece be found out of ten thousand, it is cherished as a jewel of rare price and of inestimable value."

In view of all this, I have come to the conclusion that on account of its beauty and the great rarity of this kind of jade the Chinese would not be willing that we should dethrone this regal piece on account of a little difference in its specific gravity or its abundance of silica; and I have therefore retained it in the Collection.

## 367 MING DYNASTY (1368-1644)

ARTIST'S WATER-DISH (*Pi Hsi*)

CHINA

Dimensions:  $2.62 \times 8.0 \times 5.59$  inches.  $6.6 \times 20.3 \times 14.2$  centimetres. Weight: 2 pounds 8.737 ounces. 1154.900 grammes  
 Specific gravity: 2.9495; hardness: 6.5. *Nephrite*  
 Color: White with a very faint greenish tint

An artist's water-dish modelled in the form of a marriage wine-cup (*Ho-huan Pei*) with two intersecting diamonds, which overlap in the middle so as to make there a third quadrangular diamond-shaped

cavity. The base is carved in relief in the same peculiar form, differing only in the smaller size of the central cavity where the diamonds intersect, and it has four small feet ornamented with scrolls at the



angles and sides of the rim, which help to support the cup. The outside of the cup is plain, only grooved round the top to define the band round the rim. It has two loop-handles at the sides, carved in



openwork in the form of a phoenix with outspread wings above and supporting a movable ring below. The retreating angles left by the intersecting diamonds in front and behind are occupied by the figures of four boys, executed in high relief with openwork, the one to the left of each pair standing and facing outward, while the one on the right is stooping so as to support the cup with one of his hands. They are dressed

in ordinary costume with short coats, and have their heads shaven so as to leave separate locks of hair tied up in tufts. Three of the boys carry in their hands felicitous emblems—the sacred peach of longevity, the precious vase filled with a plant with coral-red berries, and the magic ju-i wand; the fourth, both of whose hands are occupied in supporting the cup, has tied to his dress a medallion, in the form of a “cash,” inscribed with the characters *T'ai ping*—meaning “Great Peace.”

This is one of the pearls of the Collection. The jade is of a beautiful homogeneous and translucent texture, and its whiteness is as pure as the white of a hard-boiled egg. In style it is simple, and this simplicity constitutes its beauty. The taste is as pure as the material, and the richness of the workmanship worthy of jade. It is one of the exquisite pieces which came into foreign hands at the looting of the Imperial Summer Palace near Peking in 1860.

By transmitted light the material shows some delicate veinings and cloudings, and at the thinner end a very delicate yellowish-green color and an apparent opalescence.

Wine-cups of this design are known by the name of *Ssu-hsi Pei*, which conveys the idea of “Cup of fourfold joy” as well as that of “Cup with the four boys,” the word *hsi* having both these meanings. The boys represent angels or messengers from the gods, and bring with them the blessings of long life, rank, riches, and peace from the realms of the immortals. The form of the cup is also significant, the diamond symbol (*fang-sheng*) being, in China, the emblem of victory or success, just as the “star” is with us, so that the interlaced double diamond is the emblem of successful union. We have before us a little jade symbol carved in this form to be worn in front of the cap of a boy at a wedding. The same symbol is used as the “double star” of success in scholarship, and is constantly met with in architectural and other decoration.

368

BOWL WITH TWO DRAGON-HANDLES (*Lung Erh Hsi*)

CHINA

MING DYNASTY (1368-1644)

Dimensions: 4.19 × 12.59 inches. 10.6 × 32.0 centimetres.  
Specific gravity: 2.9578; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

Weight: 4 pounds 10.400 ounces. 2109.270 grammes



A large shallow bowl for artists' use, of rounded bulging form, with slightly projecting inner rim to prevent the water running over. It is of plain simple outline, perfectly polished so as to bring out the full

beauty of the material, and stands upon five low broad feet lightly carved in scroll form and curved outward. The two broad handles, standing out in strong relief and boldly carved, are in the form of



winged dragons' heads, springing from below the centre of the bowl and resting their horns and wings upon the rim. Upon each of these handles hangs a large movable ring, reaching nearly to the bottom of the bowl, carved out of the same piece of jade.

This is a remarkably large piece of very pure, translucent, homogeneous and compact jade, with only very faint veins on one side.

It is one of those pieces that were carried to Europe after the looting and destruction of the Summer Palace at Peking, whence at a later date it found its way into this Collection. In all his experience its late owner never saw its equal in either Europe or China. Purity of material, dignity of size, gracefulness of form, simplicity of decoration, and beauty of polish all unite to render it an exceptionally charming bowl.

369

MING DYNASTY (1368-1644)

SQUARE VASE (*Hua Ku*)

CHINA

Dimensions:  $9.0 \times 4.72 \times 3.16$  inches.  $22.8 \times 12.0 \times 8.0$  centimetres. Weight: 2 pounds 6.218 ounces. 1083.480 grammes  
Specific gravity: 2.9492; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint and a very dark gray spot on each side

A tall upright vase of beaker shape, with quadrangular section and a long handle of rectangular scroll design. The centre of the body is surrounded by a broad projecting band, decorated in low relief with an archaic pattern representing the features of the gluttonous ogre called *t'ao-t'ieh*, conventionally outlined upon a ground diapered with a rectangular fret. There is a projecting rim round the foot incised with the same Greek fret, and a similarly ornamented border at the mouth of the beaker, which is deeply hollowed out in front and behind. Upon the hollow in front is poised a bat flanked by cloud scrolls delicately executed in openwork, while the hollow behind is filled with a round disc having effulgent rays issuing from it in the midst of clouds in openwork scrolls. Clinging to the angle of the vase an imperial five-clawed dragon stands out in high relief, its two-horned bearded head raised erect, resting its right foot upon the rim of the vase and about to grasp the precious jewel with its left. A second dragon, of different form, is raising its head above the handle, round which its scaleless body is coiled, while it clings with its bifid tail to the front.

The material is translucent, homogeneous and compact, with an inky-black patch, seven millimetres in breadth, which seems to have run through the original block from side to side and reappears on the back of the vase. At the upper end there is a brown staining, and a vein structure running obliquely across the body of the vase is apparent. With these exceptions, the material is of remarkable purity and has taken a fine polish.

The dragon (*lung*), the king of scaly reptiles, is the chief of the four spiritually endowed creatures of Chinese lore, the other three being the *chi-lin*, the *feng-huang* or phoenix, and the tortoise. It is said to wield the power of transformation, and the gift of rendering itself visible or invisible at pleasure, ascending to the skies in spring and in the autumn burying itself in the watery depths. In its usual form it is depicted as a composite monster, with scowling head, long straight horns, a scaly serpentine body, a bristling row of dorsal spines, four limbs armed with formidable claws, and with flame-like appendages on its shoulders and hips. According to some authorities, it has the head of a camel, the horns of a deer, the eyes of a demon, the ears of an ox, the body of a serpent, the scales of a carp,

and the claws of an eagle. The early cosmogonists in China declare that there are four kinds of *lung*—the celestial dragon, which guards the mansion of the gods and supports them so that they do not fall; the spiritual dragon, which causes winds to blow and produces rain for the benefit of mankind; the dragon of earth, which marks out the course of rivers and streams; and the dragon of the hidden treasures, which watches over the wealth concealed from mortals. In Chinese Buddhism it plays an important part, either as a force auxiliary to the law or as a malevolent being to be converted or quelled, having a general identity with the serpent and taking the place of the cobra in Indian Buddhist legend. The older Chinese artists of the Sung dynasty depict the dragon with three claws on each foot, and the Japanese have adopted this form. In modern times the five-clawed dragon is peculiarly symbolical of the Son of Heaven (the emperor), being embroidered upon his robes and carved upon his throne—the “dragon-seat.” It is usually figured in pursuit of or grasping a pearl or jewel emitting effulgent rays from its surface. Nine dragons filling the ground—the number of the nine Naga Rajas or Serpent-kings of Buddhist fable—are often shown in the carvings of imperial palaces and painted on imperial vases; while a favorite decoration for bowls and cups is a pair of five-clawed dragons holding up the characters *Fu shou*—“Happiness and long life.” Princes of the imperial blood also use five-clawed dragons; more ordinary mortals have to be contented with four claws; yet some of these four-clawed monsters, so boldly designed and painted in brilliant colors on K'ang-hsi porcelain vases, are the most effective of their kind. Some of the finest pieces in this Collection came originally from the Yuan Ming Yuan, the Summer Palace of the emperors of China, situated near Peking, which was burned and sacked during the British and French Expedition in 1860. (See “Incidents of the China War,” by Captain Henry Knollys, R.A., Blackwood, London, 1875.) This accounts for the fact that so many are decorated with the imperial dragon, either alone or in combination with the imperial bird, the phoenix.



370

DOUBLE-CYLINDER VASE (*Shuang Kuan P'ing*)  
MING DYNASTY (1368-1644)

CHINA

Dimensions:  $6.47 \times 3.62 \times 2.97$  inches.  $16.4 \times 9.2 \times 7.5$  centimetres.  
Weight: 2 pounds 3.601 ounces. 1009.280 grammes  
Specific gravity: 2.9592; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint and a few spots of gray

A twin-cylinder vase with double cover, composed of two parallel cylinders carved out of one piece and connected by grotesque animals—an eagle-headed bird standing on the back of a crouching tiger, with outspread wings carved in slight relief on the front of the

cylinder, and the head and shoulders of both projecting boldly in front. At the back the cylinders are united by a







No. 369

SQUARE VASE

(*Hua Ku*)

Ming Dynasty (1368-1644)

Nephrite











curved double-band handle resting on the projecting hinder part of the tiger and almost concealing the etched tail-feathers of the bird. The other decoration consists of conventional foliated bands on the body, and fret borders on the upper rim and round the cover. A two-horned dragon, the *ch'ih* of old bronzes, coiled in high relief, serves to connect the covers and as a handle.

There is another twin-cylinder vase of somewhat similar form and design in the Collection (No. 614), but differing in size and in the details of the decoration. Vases of this kind are usually classed as honorific and are supposed to have been presented to successful military commanders by the emperor as honorary rewards for their ser-

vices. They are commonly known as *Ying-hsiung T'ung* or "Champion Cylinders." They were formerly cast in bronze, of larger size, and were intended to hold arrows. In the Bishop Collection of bronzes there is one fifteen inches in height, which is referred to the thirteenth century and is described as "A double cylinder, grouped with a tiger, an eagle, and a dragon, emblems of the power and strength of the earth, the air, and the sky."

The material of this "champion vase" is translucent, very homogeneous and compact, and of great purity, the only exception being the beautiful gray stainings on the handle and both sides of the foot.

371 MING DYNASTY (1368-1644) PENDANT (*P'ai-tzū*) CHINA

Dimensions:  $2.12 \times 3.56 \times .28$  inches.  $5.4 \times 9.0 \times .7$  centimetres. Weight: 1.969 ounces. 55.821 grammes  
Specific gravity: 2.9478; hardness: 6.5. *Nephrite*  
Color: White with faint greenish tint and stains of russet

An ornamental semi-circular pendant in the form of a butterfly (*Hu-f'ieh*), with the antennae intertwining with a branch of the sacred fungus of longevity. The natural tinting of iron-rust over the surface, due to the presence of hydrous oxide of iron, is considered to add to its value as it adds to its beauty.

372 MING DYNASTY (1368-1644) WRITER'S HAND-REST (*Nuan Shou*) CHINA

Dimensions:  $.34 \times 5.75 \times 2.59$  inches. Thickness: .06 inch. Weight: 2.398 ounces  
 $.9 \times 14.6 \times 6.6$  centimetres .2 centimetre 68.001 grammes  
Specific gravity: 2.9637; hardness: 6.5. *Nephrite*  
Color: White with light yellowish-gray tint

A hand-rest, of rounded oblong outline and flat tabular form, with the rim folded down on two sides to rest on the table. Modelled in the shape of a flattened two-jointed section of bamboo, the joints indicated by a groove cut in the middle parallel to the wavy ends of the tablet, the lower end of which is ornamented by a row of tubercles cut in relief as if jewelled. It is decorated upon the upper convex surface with a drawing in slight relief of a three-branched stem of bamboo with cloud scrolls rolling across in the background. At the side, written in cursive script, is a line of poetry quoted from an old verse:

"Three branches waving in the breeze, a sign of the return of spring."

On the lower surface, engraved in antique script, are the lines:

"The heart of the bamboo is empty and its joints are solid. Throughout the four seasons of the year its twigs are not changed, nor do the leaves fall. It is altogether typical of the virtuous qualities of the scholar."  
(Signed) Tzū-KANG."

This is a personal name. The family surname is not given, and we cannot tell whether the writer was the person for whom the object was carved, or the actual carver—probably the former.

The material of the piece is translucent, homogeneous and compact, with a slight vein-staining at one of the ends. There are a few delicate green markings throughout the piece, which is very perfect in texture.

373 MING DYNASTY (1368-1644) GIRDLE-BUCKLE (*Tai Kou*) CHINA

Dimensions:  $5.0 \times 1.6 \times 1.06$  inches.  $12.9 \times 4.1 \times 2.7$  centimetres. Weight: 5.274 ounces. 149.534 grammes  
Specific gravity: 2.9577; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A girdle-buckle terminating at one end in a two-horned dragon's head and having a smaller hornless dragon and leafy scrolls carved in openwork in high relief on the front. A plain stud projects at the back. This form of buckle is of ancient bronze pattern, the

design being commonly known by the name *Ts'ang lung hsün tzū*—"The celestial dragons guarding their young."

The material is translucent, compact and homogeneous, and free from all intruding foreign substances.

374 MING DYNASTY (1368-1644) GIRDLE-BUCKLE (*Tai Kou*) CHINA

Dimensions:  $5.31 \times 1.16 \times 1.06$  inches.  $13.5 \times 2.9 \times 2.7$  centimetres. Weight: 4.412 ounces. 125.082 grammes  
Specific gravity: 2.9524; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

Girdle-buckle terminating at one end in a two-horned dragon's head and having a smaller hornless dragon in salient relief on the front. The stud on the back is plain.

The material is translucent, compact and pure, showing by transmitted light a coarsely crackled interior, a sinewy texture, and almost opalescent reflections.



## 375 MING DYNASTY (1368-1644)

GIRDLE-BUCKLE (*Tai Kou*)

CHINA

Dimensions:  $5.88 \times 1.16 \times 1.03$  inches.  $14.9 \times 2.9 \times 2.6$  centimetres. Weight: 4.736 ounces. 134.270 grammes  
 Specific gravity: 2.9473; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

Girdle-buckle terminating at one end in a two-horned dragon's head and having a smaller hornless dragon with cloud scrolls carved in high relief on the front. The round stud at the back is carved in the form of a flower.

The material is translucent, very compact and pure, and entirely free from included substances. By transmitted light its sinewy texture and an apparent opalescent reflection are well shown.

## 376 MING DYNASTY (1368-1644)

PAIR OF PEACHES (*Shuang T'ao*)

CHINA

Dimensions:  $3.41 \times 4.0 \times 2.16$  inches.  $8.7 \times 10.2 \times 5.5$  centimetres. Weight: 1 pound 6.785 ounces. 645.960 grammes  
 Specific gravity: 2.9534; hardness: 6.5. *Nephrite*  
 Color: White with delicate greenish tint

A branch bearing two peaches, with the stalks and leaves carved in relief and openwork over the surface of the fruit. Two tiny monkeys are playing together at the top, as if intended to show by comparison the gigantic size of the mythological fruit.



The peach is indigenous to China, and is considered an emblem of marriage as well as of longevity, the poets likening a bride in her graceful elegance and promise to a blossoming peach-tree. A still more prominent position is given to it in the mystical fancies of the Taoists, and a peach-tree is always seen in pictures of their paradise in the

K'un Lun Mountains, generally represented with monkeys sporting upon its branches. This peach-tree yields the fruit of immortality, and twigs are sometimes brought from it in the beaks of sacred birds. The fruit is said to ripen but once in three thousand years and to confer that period of life upon those who are fortunate enough to taste it. The Taoist peach-eater, Tung-fang So, is represented as an old man hugging a gigantic peach and dancing merrily, the story saying that when the fairy queen Hsi Wang Mu descended from her mountain realm to visit the Emperor Wu Ti, in the year 110 B. C., she caught sight of Tung-fang So peeping at her through the windows, and exclaimed: "That child you see yonder once stole three of my peaches and is now more than nine thousand years old." Shou Lao, the god of longevity, is usually seen holding one of these peaches, or with a dish of the fruit beside him.

## 377 MING DYNASTY (1368-1644)

A CRAB (*P'ang-hsieh*)

CHINA

Dimensions:  $1.22 \times 4.97 \times 3.16$  inches.  $3.1 \times 12.6 \times 8.0$  centimetres. Weight: 8.638 ounces. 244.910 grammes  
 Specific gravity: 2.9631; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A cleverly executed carving of the hollow-backed crab feeding upon a branching reed, which it holds tightly in its two claws, the leaves floating backward underneath; all finished in openwork and intended evidently to be used as a paper-weight for a writer's table.

The material is translucent and remarkably homogeneous and compact. By transmitted light it shows a sinewy structure and an apparent opalescent reflection.

## 378 MING DYNASTY (1368-1644)

A SCREEN (*Ch'a P'ing*)

CHINA

Dimensions:  $11.91 \times 6.88 \times 4.22$  inches.  $30.2 \times 17.5 \times 10.7$  centimetres.  
 Weight: 7.368 ounces. 208.893 grammes  
 Specific gravity: 2.9566; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

A small slab of oblong form with one end rounded, originally fashioned to be worn in the girdle, now mounted as a screen and backed by a little mirror in an elaborate modern frame of wood and ivory, with a second piece of jade carved in openwork in a regular scroll or trellis pattern below. The plaque is carved in deep relief with a religious Taoist subject, including a central figure and a procession of nine pairs of attendants carrying symbols, arranged in three tiers so as to be separated on the two sides, and, following, as it were, the central figure two by two in processional order. All the figures stand upon clouds, and the few interspaces are filled with cloud-scrolls. The principal figure, dressed in flowing robes, crowned with a jewelled two-winged tiara, and holding the long oblong-pointed jade symbol of sovereign rank with his two hands, stands out promi-

nently in the middle under a curtained canopy. This is Yü Hwang Shang Ti, "The Jade (or Gemmy) Imperial Supreme Ruler," the highest divinity of the Taoist pantheon. The processional figures carry in each rank in order a round brocaded banner-screen, a vase with flowers, a stand-ard with a stork at the top, a branch of lotus blossom, a chowry or fly-brush, a palm-leaf fan, two round triple umbrellas, and a lighted incense censer with a cloud of incense rising from it.





The divinity figured here, which occupies the chief place in Taoist temples, is supposed to be enthroned in the constellation of the Great Bear, so that the lesser divinities in the other stars continually circle round him, seated on his throne near the pole, as it were in the act of worship. He has supplanted in the common idea the original Shang Ti, the Supreme Deity of the ancient classics, who is now sacrificed to only by the emperor in the great annual ceremony at the Temple of Heaven at Peking, when he kneels and prostrates himself before the tablet of Shang Ti and offers presents of silk and jade to him as the source of his own vice-regent power.

The material of this slab is translucent and homogeneous, showing no inclusions of any kind. The texture is sinewy, and by reflected light has very much the appearance of a very opalescent bit of horn.

379

SMALL SCREEN (*Ch'a P'ing*)  
MING DYNASTY (1368-1644)

CHINA

Dimensions: 9.03 × 11.47 × 5.31 inches.

22.9 × 29.1 × 13.5 centimetres.

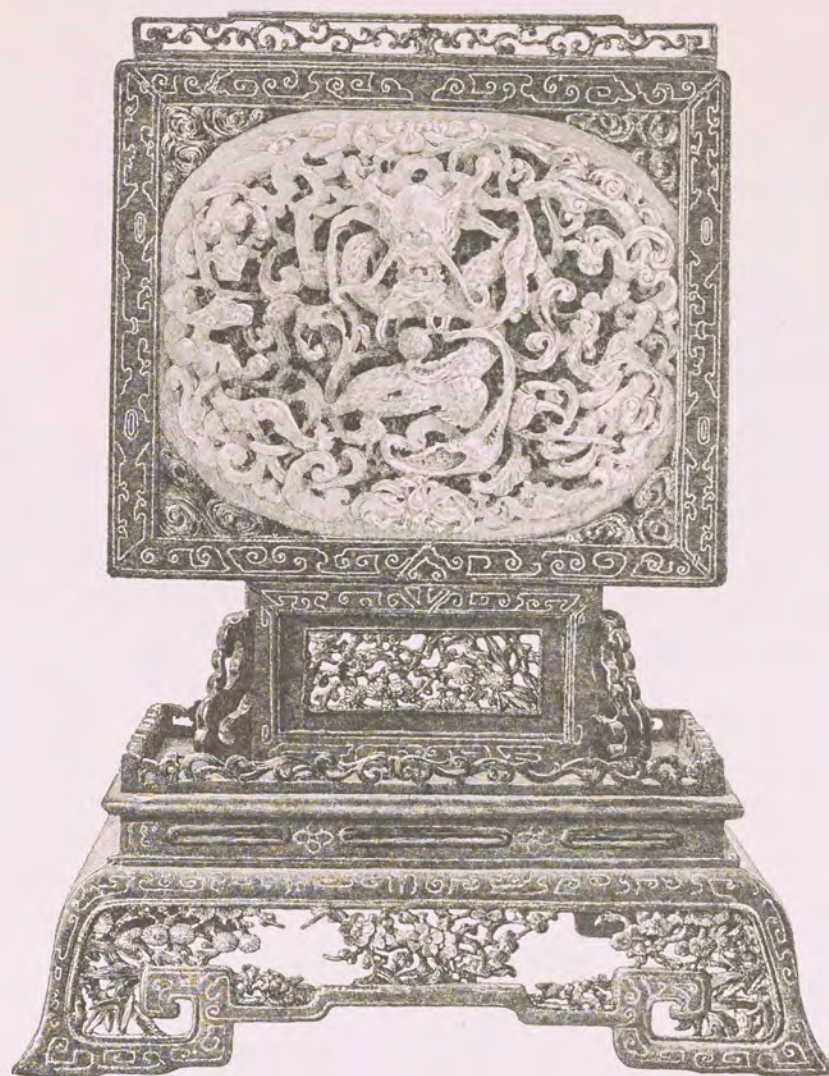
Weight: 2 pounds 9.903 ounces. 1187.950 grammes

Hardness: 6.5. *Nephrite*

Color: White with light grayish tint

A thick oval plaque mounted as a screen, deeply and vigorously carved in openwork with five dragons in the midst of complicated leafy scrolls derived from the tree-peony, a blossom of which is seen at the top and bottom. The large two-horned celestial dragon stands out full-faced in the centre coiled round the precious jewel, and the four smaller rain-dragons occupy the circumference.

The material is translucent, very compact and homogeneous, showing scarcely any inclusions. The marks of the cylindrical drill used in the lapidary work of this piece are very apparent in several places.



380

MING DYNASTY (1368-1644)

LARGE DISH (*Hsi-tzu*)

CHINA

Dimensions: 7.59 × 11.03 × 2.97 inches. 19.2 × 25.5 × 7.5 centimetres. Weight: 5 pounds 1.666 ounces. 2315.18 grammes

Specific gravity: 2.9533; hardness: 6.5. *Nephrite*

Color: White with light greenish tint and some mottlings of white and light russet



A dish carved in the form of a large blossom of the tree-peony (*Paeonia moutan*). The outer rings of the petals stand up all round to form the margin of the dish, the inner rings and the middle of the flower being carved upon the bottom. The woody branched stem is carved in openwork and projects to form the handle and base, branches spreading out from it underneath bearing leaves carved in relief and a bud which stands out upon the surface of the dish opposite the handle. The carving is natural and realistic. The peony, the king of flowers with the Chinese, is the special symbol of rank and honor.

This is a remarkable specimen of artistic lapidary work, whether we regard the boldness of the design or the patient skill of the workman in reproducing nature in such a hard and tough substance.

The material is translucent, homogeneous and compact, with numerous gray or white markings that are less translucent than the mass, but are evidently only another form of the same mineral. The sinewy structure of the nephrite and a faint opalescence are apparent on the thin edges.

381

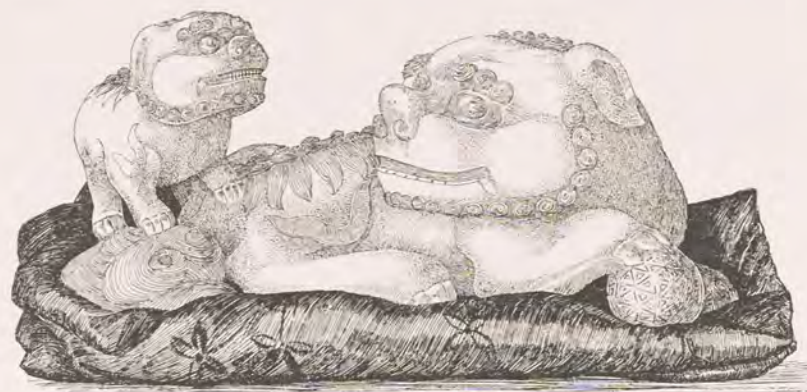
LIONS, LARGE AND SMALL (*T'ai Shih Hsiao Shih*)

CHINA

MING DYNASTY (1368-1644)

Dimensions: 3.66 × 8.16 × 5.19 inches. 9.3 × 20.7 × 13.2 centimetres. Weight: 5 pounds 7.002 ounces. 2466.500 grammes  
Specific gravity: 2.9588; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

Conventional carving of lions, with the hair of the eyebrows and mane, and that along the spine, arranged in formal spiral ringlets. They have two small recurved horns, and the shoulders and hips are adorned with the flame-like attributes of a supernatural beast. The large lion is reclining with its right forepaw resting upon a round ball engraved with a brocaded pattern. There are two cubs, one standing on the mother's back, the other reclining close to her shoulder.



The lion is a favorite subject of Chinese art, although it is not a native animal—the reason, perhaps, why its representative is so unlike the original, so much so that it is often described as a kylin, or even as a dog (*chien de Fo*). A large pair of lions, of marble or bronze, is placed upon pedestals on each side of the principal gateway of palaces and temples in China, one with a young lion under its paw, the other with a brocaded ball. In pictures a man in Turkish dress is often painted leading a lion by a string which is playing with a stuffed embroidered ball held in the keeper's other hand; or a porcelain vase is decorated with a number of "lions playing with embroidered balls." The lion of Chinese

fable is a sportive animal, in contradistinction to its dreaded congener, the tiger. The group carved in this way is said to be symbolical, in a punning way, of the Grand Preceptor T'ai Shih and the Junior Preceptor Hsiao Shih, a quaint conceit which we give for what it may be worth.

The material of this solid piece is translucent, homogeneous and compact, with a veining in one place slightly more white and opaque than the rest of the piece.

382

MING DYNASTY (1368-1644)

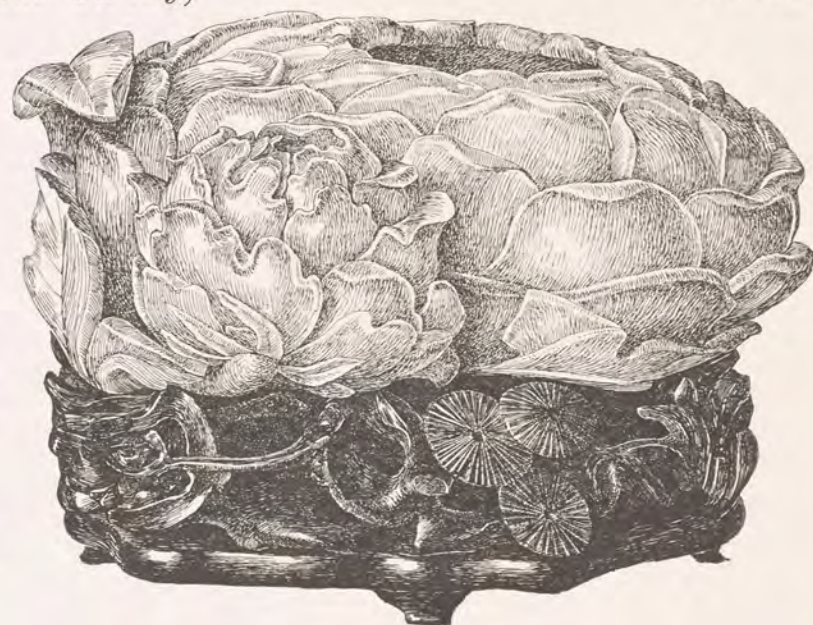
WATER-RECEPTACLE (*Shui Ch'eng*)

CHINA

Dimensions: 2.56 × 6.22 inches. 6.5 × 15.8 centimetres.  
Weight: 3 pounds 8.173 ounces. 1592.480 grammes  
Specific gravity: 2.9629; hardness: 6.5. *Nephrite*  
Color: White with light grayish tint and flakes of snow

A water-holder for the writer's table, modelled in the form of a full-grown blossom of the tree-peony (*Paeonia moutan*), the Chinese "king of flowers" and the special symbol of rank and honor. The cut stem, which sends out branches at the base, bears leaves executed in bold relief with openwork carving and an opening bud which projects at one side of the large blossom. The carving on this is well executed in naturalistic details, and the polish is beautiful and horn-like.

The material is translucent, homogeneous and compact, filled in large part with minute subtranslucent inclusions, probably nephrite, and which are visible to the naked eye.



383

MING DYNASTY (1368-1644)

SMALL VASE (*Hua Ku*)

CHINA

Dimensions: 3.88 × 2.25 × 1.47 inches. 9.8 × 5.7 × 3.7 centimetres. Weight: 6.867 ounces. 194.685 grammes  
Specific gravity: 2.9573; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A small slender vase of beaker shape with quadrangular section, square below, a little broader above. The centre of the body projects in the form of a broad band, which is ornamented with round knobs in a diaper pattern. There is a projecting rim at the top with Greek fret incised, and the base is decorated with a similar border, but standing out in less relief. At the side there is a long handle of rectangular scroll design, round which is coiled a two-horned dragon, with

bristling mustaches and scaly body, boldly carved in openwork, in pursuit of the precious jewel which stands out on the opposite angle near the top, emitting rays of effulgence. On the other side of the vase are carved in high relief two smaller hornless dragons, with smooth bodies and bifid tails.

The material of this piece is perfect. It is very compact and translucent, and by transmitted light shows a very delicate vein structure.







No. 384

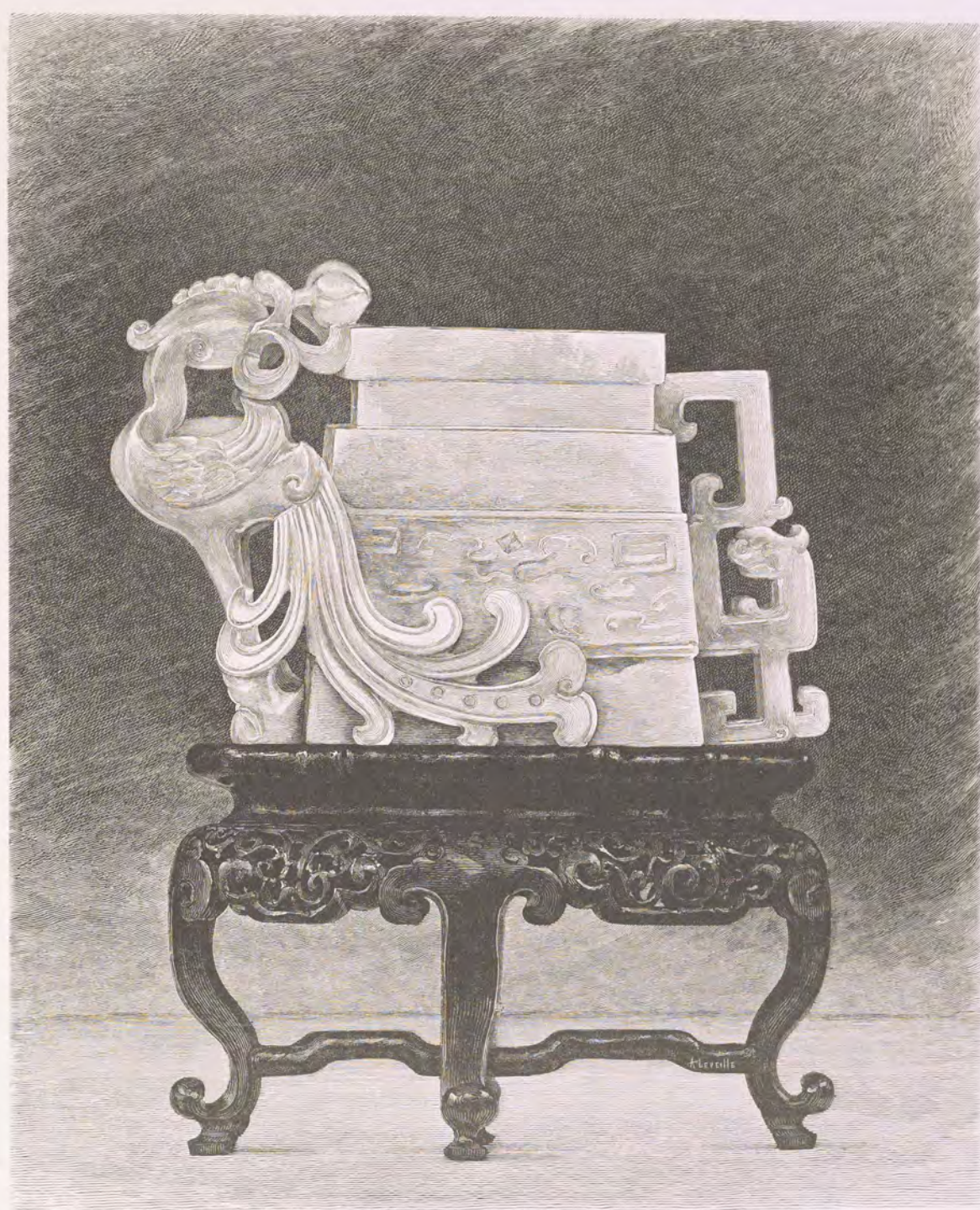
RECTANGULAR VASE

(*Fang Chüeh*)

Ming Dynasty (1368-1644)

Nephrite











384 MING DYNASTY (1368-1644) RECTANGULAR VASE (*Fang Chüeh*)

CHINA

Dimensions:  $3.31 \times 4.75 \times 1.81$  inches.  $8.4 \times 12.1 \times 4.6$  centimetres. Weight: 12.123 ounces. 343.692 grammes  
 Specific gravity: 2.9478; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A small low rectangular vase of oblong section, with long handle reaching from the base nearly to the rim of the rectangular scroll design ending in a phenix head. Of slightly pyramidal form, shaped after the pattern of an ancient bronze sacrificial wine-vessel, it is decorated with a prominent broad encircling band, carved in relief with the features of the *t'ao-t'ieh* ogre and conventional scrolls. On the side opposite to the handle is carved, in high relief and openwork, the figure of a phenix perched upright upon a small rock and embracing with its spread tail the front of the vase. It is carrying in its beak a branch bearing two peaches.

This vase appears to be a companion piece to the little beaker described under No. 383, being designed and decorated in the same style. The Chinese are fond of placing a dragon and a phenix vase side by side, if not combined in the decoration of the same piece. The Chinese phenix or *fêng-huang*, a fabulous bird of wondrous form and majestic nature, is the third of the four supernatural creatures of Chinese lore. The male is called *fêng*, the female *huang*, hence the generic name. It is said to have the head of a pheasant, the beak of a swallow, the neck of a tortoise, and the outward semblance of a

dragon, but in works of art it is a nondescript bird of gorgeous plumage, intermediate between that of the peacock and the bird of paradise, and bears flame-like appendages where the head joins the body. The name *fêng-huang* is generally translated "phenix," and, like the *ch'i-lin*, it is regarded as an omen of national good, and as heralding the advent of a beneficent reign. In poetry, many covert allusions to sexual pairing are intimated by reference to the inseparable fellowship of the *fêng* and the *huang*. In modern usage, the phenix is specially appropriated to the empress (and this piece was probably made for one of the empresses), as the five-clawed dragon is the peculiar attribute of the emperor. It is often represented carrying fruit or flowers in its beak, bringing a branch of the sacred peach from the realms of the immortals, or a spray of its favorite blossom, the tree-peony, the emblem of official rank.

The material of this piece is translucent, compact and homogeneous, with a very sinewy structure. By transmitted light it shows a delicate veining. In one place, near the upper part, a long vein of what appears to be a tougher form of the same mineral is apparent.

385 MING DYNASTY (1368-1644) MINIATURE FIGURE (*Hsiao Hsiang*)

CHINA

Dimensions:  $2.28 \times 1.59 \times 1.0$  inches.  $5.8 \times 4.0 \times 2.5$  centimetres. Weight: 2.214 ounces. 62.772 grammes  
 Specific gravity: 2.9497; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

Small carving of an old man fishing. He has a pointed beard and unshaven head with the hair wound round into a coil at the top, in the fashion of the Ming dynasty. Stripped to the waist and with legs bare, he is stooping over a basket-trap, from which he has just pulled out a fish, with an air of intense satisfaction upon his wrinkled face. He has a flat covered basket tied to his girdle, and a straw hat,

or rather sunshade, for it is a crownless plaited ring made to be worn round the topknot of hair, slung behind by a cord passing round the shoulders.

The material is translucent, very homogeneous and compact, showing by transmitted light internal fleckings that are white and sub-translucent.

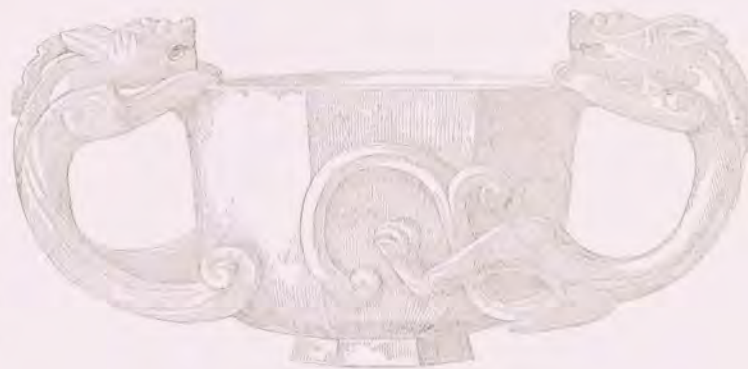
386 MING DYNASTY (1368-1644) MINIATURE LOVING-CUP (*Chiu Pei*)

CHINA

Dimensions:  $1.94 \times 4.25$  inches.  $4.9 \times 10.8$  centimetres. Weight: 3.428 ounces. 97.208 grammes  
 Specific gravity: 2.9606; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

An octagonal cup of good form, with slightly expanded mouth and projecting rim at the foot, with two large prominent handles formed by the bowed backs of a pair of dragons. The dragons, with their heads and fore feet upon the rim of the cup, cling to the sides with their hind feet and tails, and have a cloud-scroll proceeding from the body of each to the opposite side of the cup, acting as a supporting buttress.

The cup is almost of egg-shell thinness and is a beauty in material, form, color, and simplicity of decoration. There is but one small vein in the base, and when a strong light is allowed to pass through it an apparent crystalline structure, which may be a remnant of former jadeite, is visible.

387 MING DYNASTY (1368-1644) MEDALLION (*Pai-tzū*)

CHINA

Dimensions:  $2.09 \times 2.09 \times .31$  inches.  $5.3 \times 5.3 \times .8$  centimetres. Weight: 1.232 ounces. 34.926 grammes  
 Specific gravity: 2.9701; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

A medallion of octagonal form, delicately carved in an elaborate openwork pattern of interlacing floral scrolls, the leaves and the large blossoms in the middle being those of the Moutan peony, the flowers on each side a lotus and a stramonium. Waves are indi-

cated below, in which stand a pair of storks or egrets, enveloped by the flowering plants.

The floral scrolls are very cleverly repeated on the other side, but the two series are not quite coincident.



388 MING DYNASTY (1368-1644)

PEN-REST (*Pi Ko*)

CHINA

Dimensions:  $3.75 \times 2.0 \times .31$  inches.  $9.5 \times 5.1 \times .8$  centimetres. Weight: 2.356 ounces. 66.800 grammes  
 Specific gravity: 2.9499; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

A girdle plaque inserted in a carved wood stand ornamented with inlaid brocade designs and fret borders in silver, to form a pen- or ink-rest. It consists of a thin oblong slab, slightly curved at one end, elaborately carved in openwork with a five-clawed dragon with flames proceeding from the neck and body in the midst of an intricate scroll design of clouds.

The material is translucent, very homogeneous and compact, of remarkably fine texture, and quite free from flaws and blemishes. By transmitted light it has almost the pellucidity of white chalcedony.

389 MING DYNASTY (1368-1644)

PEN-REST (*Pi Ko*)

CHINA

Dimensions:  $5.5 \times 1.97 \times .34$  inches.  $14.0 \times 5.0 \times .9$  centimetres. Weight: 3.455 ounces. 97.950 grammes  
 Specific gravity: 2.9526; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

An oblong slab, rectangular at one end and slightly convex at the other, elaborately carved in openwork with leafy scrolls, enclosing a peony near each of the lower corners, and near the upper corners a musical stone, *chi ch'ing*, emblem of good fortune, on the left, and a bird on the right, the centre being filled with a coiling dragon. The carving is so skilfully executed that there appears to be two layers of scroll work, one superimposed on the other, but not coincident in design except as regards the dragon. The wonderful delicacy of the

worked parts, which are firm and strong even though in some places they are thinner than paper, illustrate very convincingly the toughness of the material, which is very compact and homogeneous and entirely free from included foreign substances.

The slab is mounted on a low wooden stand, to be used on a scholar's table as a rest for his cake of ink or his pen. Originally, however, it was worn in the girdle as part of the official costume of the Ming period, a fashion still observed in Korea and Annam.

390 MING DYNASTY (1368-1644)

PEN-REST (*Pi Ko*)

CHINA

Dimensions:  $6.19 \times 2.12 \times .28$  inches.  $15.7 \times 5.4 \times .7$  centimetres. Weight: 3.047 ounces. 86.410 grammes  
 Specific gravity: 2.9551; hardness: 6.5. *Nephrite*  
 Color: White with light grayish tint



An oblong slab, rectangular at one end, convex at the other, deeply and elaborately carved in openwork with formal leafy scrolls which start from a rock in the centre and bear a peony flower in each of the lower corners, the upper corners of the slab being occupied by a bird on the right and a bat on the left, while the centre is filled with a coiling dragon. The slab is inserted in a wooden mounting to stand on the scholar's table as a rest for the cake of Chinese ink. Originally it was worn in the girdle as part of the official costume of the Ming period, a fashion retained to the present day in Korea and Annam.

The material is translucent, very homogeneous and compact, and free from inclusions of all kinds. By transmitted light this piece appears much whiter than when viewed by the unassisted eye.

391 MING DYNASTY (1368-1644)

ORNAMENTAL KNOB (*Ting*)

CHINA

Dimensions:  $1.66 \times 2.53 \times 1.5$  inches.  $4.2 \times 6.4 \times 3.8$  centimetres. Weight: 2.443 ounces. 69.261 grammes  
 Specific gravity: 2.9589; hardness: 6.5. *Nephrite*  
 Color: White with faint greenish tint

An oval knob elaborately carved in openwork with intricately interwoven scrolls of leaves and flowers of the tree-peony, from the top of which projects a two-horned dragon's head. The base, slightly concave, is drilled with nine round holes. The wire is passed through



these holes when the knob is attached to the wooden cover of the incense-burner or other similar object for which it is intended.

The mineral is translucent, compact and sinewy in texture, with a faint opalescence by transmitted light.



392 MING DYNASTY (1368-1644)

ORNAMENTAL KNOB (*Ting*)

CHINA

Dimensions: 2.22 × 1.78 inches. 5.6 × 4.5 centimetres. Weight: 2.914 ounces. 82.614 grammes  
 Specific gravity: 2.9734; hardness: 6.5. *Nephrite*  
 Color: Very light gray

An ornamental knob ingeniously and elaborately carved in openwork out of the solid. Lotus plants and tree-peonies interlace, a peacock stands upon a rock, accompanied by his mate, under the shade of the peony, upon a branch of which a long-tailed bird like a parrot is perched, and a couple of storks stand beside the lotus.

The material is translucent, homogeneous, compact, and entirely free from inclusions of any kind. By transmitted light its sinewy structure and a faint opalescence are very apparent.



393 MING DYNASTY (1368-1644)

SQUARE MEDALLION (*P'ai-tzū*)

CHINA

Dimensions: 2.66 × 2.31 × .31 inches. 5.9 × 6.7 × .8 centimetres. Weight: 1.277 ounces. 36.210 grammes  
 Specific gravity: 2.9458; hardness: 6.5. *Nephrite*  
 Color: White with light grayish tint

A tiny square medallion with a thin undecorated raised rim like that of a tray, most minutely carved in openwork in regular scrolls to make a charmingly delicate brocade design, which is interrupted by a lion playing with an embroidered ball standing out in bold relief. The lion, which has been hollowed out at the back, is of the usual conventional form, with a fringe of curling hair round the neck, a flowing tail, and flames proceeding from the hips and shoulders. It has a cord in its mouth tied in loops and attached at the other end

to an openwork ball with a fringe of tassels flying from the free surface of the ball.

The lion sporting with embroidered ball (*shih-tzū k'un hsiu ch'iu*) is a common subject in Chinese art. The piece was perhaps originally an ornament for the girdle.

With the exception of some tiny inclusions in the upper edge of the piece, the material is quite free from impurities, and the workmanship is very delicate.

394 MING DYNASTY (1368-1644)

INCENSE-BURNER (*Hsiang Lu*)

CHINA



Dimensions: 4.22 × 2.84 × 2.31 inches. 11.7 × 7.2 × 5.9 centimetres.  
 Weight: 5.509 ounces. 156.200 grammes  
 Specific gravity: 15 min.—2.7883; hardness: 6.5. *Nephrite*  
 1 hour—2.8120  
 6 days—2.8642  
 Color: Ashy gray

A small incense-burner of rounded form, with a circular rim around the foot and very prominent handles carved in openwork in the shape of floral sprays. The body is decorated with panels of lotus-petal design, fitted with an open dome-shaped silver cover.

The surface, originally white, has been changed by fire to an opaque finely crackled calcined gray. The effect is very remarkable and is worthy of close attention and study. The piece is altered so much as to lose all traces of its ever having been jade. Its delicate carving, however, remains, and the polish is still there to a great extent, but the whole piece is now more like porcelainite jasper. It seems to have stood originally on a metal stand, which also suffered in the conflagration, as at the base of contact at the foot there is a black stain which is possibly an oxide of copper. Entirely surrounding this is a grayish stain caused by the change of the copper to hydrous carbonate malachite, while there are red streaks and splashes resembling the red oxide of iron (hematite) on the other side.

This is a remarkably rich and brilliant specimen of fire-altered jade.

395 MING DYNASTY (1368-1644)

QUADRANGULAR VASE (*Fang Hu*)

CHINA

Dimensions: 4.28 × 2.88 × 2.88 inches. 10.9 × 7.3 × 7.3 centimetres. Weight: 1 pound 9.422 ounces. 720.720 grammes  
 Specific gravity: 2.9380 immediately, 2.9465 soaked days; hardness: 6.5. *Nephrite*  
 Color: White with pale greenish tint, calcined in part to a very faint brown

A low solid quadrangular vase of bulging form, decorated with archaic designs modelled after an ancient sacrificial bronze vessel. It has a square foot, slightly projecting outward below, and two loop-handles

springing from monsters' heads, with movable rings suspended from the loops. The neck is encircled at the point where it emerges from the body with a band containing dots and simple scroll ornament,



from which proceed upward and downward bands of engraved foliated pattern. Below the lower band each face of the body is carved in slight relief with conventional outlines representing the face of the gluttonous ogre (*Pao-t'ieh*). Below this another scroll band, also in gentle relief, completes the decoration of the vase.

This little vase, which formed part of the Imperial Collection in the Summer Palace at Peking until it was looted and destroyed by the Anglo-French armies in 1860, is remarkable as showing the action of fire. The lower part, which was not seriously affected by the

direct action of fire, is of a pale greenish-white with black stains which may be due to infiltration in the cracks when subjected to slight heat, or to the action of pyroligneous acids generated during the conflagration. The upper part, however, seems to have suffered actual contact with the flames, and has been changed to a very faint brown opaque substance resembling calcined bone.

Other very remarkable examples of the action of fire are described under Nos. 394, 435, and 650.

## 396 MING DYNASTY (1368-1644)

ELEPHANT (*Hsiang*)

CHINA

Dimensions:  $1.0 \times 1.5 \times 1.0$  inches.  $2.5 \times 3.8 \times 2.5$  centimetres. Weight: 1.061 ounces. 30.462 grammes  
Specific gravity: 2.9631; hardness: 6.5. *Nephrite*  
Color: Light sage-green with a light bluish tint

A tiny paper-weight, or table ornament, in the form of an elephant, with back-turned head, standing erect upon a small foliated stand—all in one piece.

The material is translucent, homogeneous and compact, and quite free from all inclusions.

## 397 MING DYNASTY (1368-1644)

FLOWER VASE (*Hua Ku*)

CHINA

Dimensions:  $3.38 \times 4.25 \times 1.72$  inches.  $8.6 \times 10.8 \times 4.3$  centimetres. Weight: 7.381 ounces. 209.254 grammes  
Specific gravity: 2.9354; hardness: 6.5. *Nephrite*  
Color: Pale yellow of waxy aspect tinged in places with light brown

A miniature flower vase in the form of a beaker (*ku*), with a quadruped and bird attached to the base standing upon rocks and carved in openwork of antique form and workmanship.

The beaker, of good form and flattened hexagonal section, has a body swelling upward to the shoulder, a low spreading foot, and a flaring neck. It has a plain band round the rim above and below, and a single fillet encircling the neck and foot near their points of emergence from the body; otherwise the surface is plainly polished. The bird, standing upon a high rock, seems to be intended for a falcon; while the one-horned animal, crouched upon a low rocky floor, represents a grotesque nondescript water-monster, the flames proceeding from its hips and shoulders indicating its supernatural attributes. A Chinese catalogue describes the animal as an archaic bear, and calls the design "The falcon (*ying*) and bear (*hsiung*) preparing for a combat," typical of a fight between nautical heroes, another meaning of the combination *ying-hsiung*.

The translucent, homogeneous and compact material of this vase is beautifully stained in part with brown hydrous oxide of iron. Its structure is very even.



## 398 MING DYNASTY (1368-1644)

PAPER-WEIGHT (*Shu Chên*)

CHINA



Dimensions:  $1.59 \times 3.59 \times 1.97$  inches.  $4.0 \times 9.1 \times 5.0$  centimetres.  
Weight: 7.257 ounces. 205.750 grammes  
Specific gravity: 2.9448; hardness: 6.5. *Nephrite*  
Color: Pale yellow of waxy aspect tinged in parts with very light brown

A paper-weight in the form of a grotesque water-monster (*shui-shou*) of nondescript character, with a dragon-like but hornless head upon a body resembling that of a Chinese lion, from different parts of which flames proceed, indicative of its supernatural attributes.

This may be regarded as a companion piece to the miniature vase of the same color and beeswax texture described under No. 400.



399 GROTESQUE MONSTER WITH VASE (*Shou Kai P'ing*)  
MING DYNASTY (1368-1644)

CHINA

Dimensions: 5.72 × 3.78 × 1.34 inches. 14.5 × 9.6 × 3.4 centimetres.  
Weight: 1 pound 2.157 ounces. 514.770 grammes  
Specific gravity: 2.9441; hardness: 6.5. *Nephrite*  
Color: Pale yellow of waxy aspect

A covered vase (*kai p'ing*) supported on the back of a grotesque quadruped (*shou*), of elaborate design and careful finish. The monster has a lion-like body with bushy curling tail, a dragon's head with long beard and mustaches, a single horn with curling tip, and four dragon's legs with four-clawed feet. The flame-like attributes proceeding from its shoulders and hips end in phoenix heads, and masses of cloud scrolls are carved in openwork around the feet, showing that it is a denizen of the sky. The vase upon its back is of flattened oval form with a bevelled neck and two open scroll-handles, and is surmounted by a cover crowned by a stud. Climbing upon the shoulder of the vase, designed in full relief with openwork, with its head raised above the rim, is a one-horned lizard-like dragon (*ch'ih*), in vigorous pursuit of the magic jewel, which pro-

jects on the other side of the vase with effulgent rays streaming behind it. A single cloud scroll decorates the surface of the vase at the back.

The material of this piece is translucent, homogeneous and compact, with tiny vein inclusions on one side. So perfectly does it resemble beeswax that it might be taken for an object moulded in that substance. The polish is very fine.



400 MINIATURE FLOWER VASE (*Hsiao Hua Ku*)  
MING DYNASTY (1368-1644)

CHINA



Dimensions: 3.78 × 2.31 inches. 9.6 × 5.9 centimetres. Weight: 4.231 ounces. 119.956 grammes  
Specific gravity: 2.9442; hardness: 6.5. *Nephrite*  
Color: Pale yellow of waxy aspect

A tiny flower vase, modelled after an ancient bronze design in the form of a round beaker (*ku*), intricately carved and delicately finished. The beaker is of the usual form, with swelling body, spreading foot, and flaring trumpet-shaped neck, and is ornamented with four projecting vertical dentated ridges (*fei-chi*), the square dentations of which are excavated below so as to form rows of studs with their free facets en-

graved with lines of ornament. The exterior surface is carved in low relief with old bronze patterns interrupted by the dentated ridges—the body with the features of the *Pao-tieh* ogre on a fret ground, the neck and foot with bands composed of four foliations filled with conventional scrolls.

The material of this beautiful little vase is translucent and homogeneous, and quite free from flaws and imperfections. There are delicate markings, almost suggesting a crystalline structure. The piece may be used as a companion to the paper-weight described under No. 398, which is of the same material and period.

401 WINE-CUP (*Chiu Pei*)  
MING DYNASTY (1368-1644)

CHINA

Dimensions: 1.81 × 4.12 × 3.91 inches. 4.6 × 10.5 × 9.9 centimetres. Weight: 9.285 ounces. 263.235 grammes  
Specific gravity: 2.9497; hardness: 6.5. *Nephrite*  
Color: Yellow permeated by very faint greenish tint; the edges are irregularly clouded with light brown

A wine-cup of charming design and artistic finish, modelled in the form of a lotus leaf with the margin tilted up and rolled in to form an irregularly convoluted rim. The veins are shown by lines engraved inside and projecting outside in relief after radiating from the stalk in the middle of the leaf. This stalk, seen in naturalistic relief underneath, is gathered into a bundle with four others, including the stalk of a smaller leaf and the stem of two lotus flowers, the fifth stem being that of the reed which ties the bundle together, a linear leaf of the reed being left as the stem to float freely and gracefully across. The flowers project prominently on opposite sides below the rim of the cup, one just expanded, the other a large pod with seeds and



only a petal or two left attached. A snail is crawling over the leaf on another side close to the rim, adding to the natural effect of the design.

The material is translucent, homogeneous and compact. On one side there is some white veining, and the top of the cup is richly marked with staining of brown, probably caused by the brown hydrous oxide of iron. By transmitted light the beautiful yellow color of the piece is very pronounced.

Microscopic examination of a thin section shows a faint suggestion of the patches derived from previous pyroxene, but the amphibole fibres are in a confused aggregation with occasionally longer streaks of nearly parallel fibres.



402 MING DYNASTY (1368-1644)

DISH (*Hsi-tzū*)

CHINA

Dimensions: 1.53 × 5.75 × 4.75 inches. 3.9 × 14.6 × 12.1 centimetres. Weight: 14.763 ounces. 418.550 grammes  
 Specific gravity: 2.9463; hardness: 6.5. *Nephrite*  
 Color: Yellow with a faint greenish tint and some cloudings of light brown

A deep flat-bottomed little dish of oval outline, with four lobed sides, projecting inward in sharp vertical ridges at the points of junction of the four lobes. Boldly carved outside, toward the middle of the longer sides, are the figures of two boys standing out in semi-detached relief as if climbing over the rim. With smiling faces and felicitous symbols suspended round their necks and hanging down behind, they figure as fairy bearers of good gifts from the regions of the immortals.

The design, like that of the marriage wine-cups, is emblematic of "Wedded Bliss and Good Fortune," being called *Shuang Hsi Chi Ch'ing*—*Shuang hsi* being "couple of boys," *chi ch'ing* "with the

musical stone," which is seen hanging round the neck of one of them. The motto may be also read in a punning way "wedded bliss and good fortune," and perhaps the dish may have been used as a wine-cup in the same way as the others. Many of the objects now put upon the writing-table as receptacles for water and cherished as artistic curios were originally intended for a more ordinary purpose.

The material is translucent, and very homogeneous and compact. By reflected light it shows a delicate brown veining in the bottom and at one side, and a somewhat mottled structure. The color is very rare, and is highly appreciated by Chinese connoisseurs.

403  
404JADE CHAINS (*Yü Lien-tzū*)

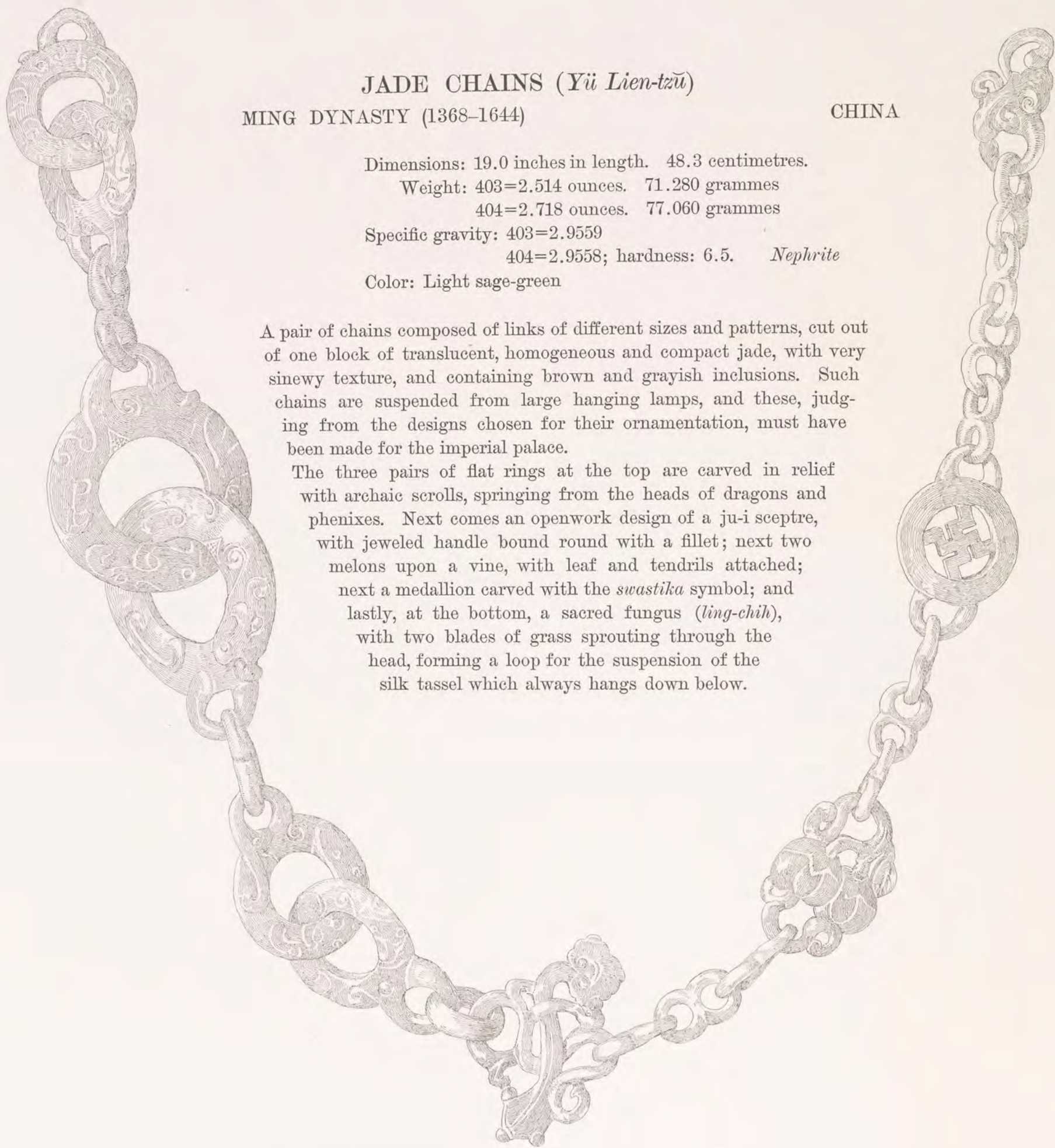
MING DYNASTY (1368-1644)

CHINA

Dimensions: 19.0 inches in length. 48.3 centimetres.  
 Weight: 403=2.514 ounces. 71.280 grammes  
 404=2.718 ounces. 77.060 grammes  
 Specific gravity: 403=2.9559  
 404=2.9558; hardness: 6.5. *Nephrite*  
 Color: Light sage-green

A pair of chains composed of links of different sizes and patterns, cut out of one block of translucent, homogeneous and compact jade, with very sinewy texture, and containing brown and grayish inclusions. Such chains are suspended from large hanging lamps, and these, judging from the designs chosen for their ornamentation, must have been made for the imperial palace.

The three pairs of flat rings at the top are carved in relief with archaic scrolls, springing from the heads of dragons and phoenixes. Next comes an openwork design of a *ju-i* sceptre, with jeweled handle bound round with a fillet; next two melons upon a vine, with leaf and tendrils attached; next a medallion carved with the *swastika* symbol; and lastly, at the bottom, a sacred fungus (*ling-chih*), with two blades of grass sprouting through the head, forming a loop for the suspension of the silk tassel which always hangs down below.





405 MING DYNASTY (1368-1644)

BOWL (*Wan*)

CHINA

Dimensions: 5.25 × 2.5 inches. 13.3 × 6.3 centimetres. Weight: 11.259 ounces. 319.200 grammes  
 Specific gravity: 2.9700; hardness: 6.5. *Nephrite*  
 Color: Light gray with stainings and veinings of brown and black

A bowl elaborately and deeply carved with a scene representing Confucius paying a visit, about 518 B.C., to Lao-tzū, the reputed founder of Taoism, then Curator of the Royal Library at Lo, the capital of feudal China, at that time ruled by the Chow dynasty. Lao-tzū is represented standing under a pine, the *ling-chih* or sacred fungus standing beneath, with two attendants carrying feather fans and a vase containing branches of fungus, and his attributes, the stork, the tortoise, and the deer, in the background. A figure in the foreground is a herald to introduce the visitor. Confucius, in the robes of office and wearing the official hat of the period, holds up the jade token of rank. Preceding him is a figure carrying a ju-i sceptre, while attendants follow carrying presents, large standard fans, and hanging silken banners, such as would mark a mandarin procession of the present day. Inside the bowl is a dragon with scroll clouds forming a medallion in bold relief.

The story of this visit of Confucius to court and his interview with Lao-tzū is well known, but few authentic details regarding it are found in the books. Confucius and Lao-tzū are the reputed founders of two rival schools of thought which exist even to the present day. Confucius was a stickler for propriety, and longed for a return of the good old days when the ancient kings ruled by vir-

tuous example, whereas Lao-tzū is represented as a mystic who desired a return to "naturalness," and pooh-poohed regulations and formality. To his talk about the ancient kings Lao-tzū is reported by the historian Szē-ma Ts'ien some centuries later to have said: "Those whom you talk about are dead, and their bones are mouldered to dust; only their words remain. When the superior man gets his time, he mounts aloft; but when the time is against him, he moves as if his feet were entangled. I have heard that a good merchant, though he has rich treasures deeply stored, appears as if he were poor, and that the superior man whose virtue is complete is yet to outward seeming stupid. Put away your proud air and many desires, your insinuating habit and wild will. These are of no advantage to you. This is all I have to tell you."

Later, when asked by his disciples for his impressions of Lao-tzū, Confucius is said to have replied: "I know how birds fly, how fishes swim, and how animals run. But the runner may be snared, the swimmer may be hooked, and the flyer may be shot by the arrow. Now there is the dragon. I cannot tell how he mounts on the wind through the clouds and rises to heaven. To-day I have seen Lao-tzū, and can only compare him to the dragon." (In other words, "His ways and his words are incomprehensible; he is too flighty for me!")

406 MING DYNASTY (1368-1644)

WATER-RECEPTACLE (*Hsi-tzū*)

CHINA

Dimensions: 2.56 × 5.72 × 4.72 inches. 6.5 × 14.5 × 12.0 centimetres. Weight: 1 pound 3.664 ounces. 557.467 grammes  
 Specific gravity: 2.9715; hardness: 6.5. *Nephrite*  
 Color: Light gray

A flat-bottomed water-receptacle of oval form and undulating outline, modelled in the shape of a sacred fungus. The rim forms a wide projecting lip in front, a semi-circular lobe on either side, and curves inward at the back in two spirals which extend perpendicularly to the base of the vessel connected by a nearly straight band. Between these spiral folds, standing inside the dish, carved in openwork in bold relief, is a two-horned dragon grasping the effulgent jewel in the claws of one of its fore feet; the jewel, the horns, and the tail projecting above the level of the rim. Outside there is a decoration in high relief with sprays of asters which spring, as it were, from the body of the fungus and raise their flowers above its upper border.

The base, which corresponds roughly in shape to the outline of the

piece, has a projecting rim formed of four scrolls with the ends involutioned where the scrolls meet. Four round holes are worked through this foot horizontally above the volutes, which remind one of those of an Ionic capital.

The material is translucent, homogeneous and compact, with several very pronounced veins of a shade slightly darker than that of the specimen itself.



407

WATER-RECEPTACLE (*Shui Ch'eng*)  
 MING DYNASTY (1368-1644) CHINA

Dimensions: 2.56 × 7.22 × 5.31 inches.  
 6.5 × 18.3 × 13.5 centimetres.  
 Weight: 2 pounds 7.845 ounces.  
 1129.611 grammes  
 Specific gravity: 3.0039; hardness: 6.5. *Nephrite*  
 Color: Light sage-green with a mottling of white and brown, and a heavy staining of variegated dead-oak-leaf

A vessel intended to hold water for the artist's or writer's table, artistically designed and boldly carved, in the shape of a full-blown lotus blossom, out of a piece of jade of variegated color. The rich brown ferruginous investment, which is very cleverly utilized in the composition to shade the decaying parts of the leaves and stalks and to tip the petals of the flower, suggests that the piece was made from a weathered boulder.





The little pot, of flattened globular form, is hollowed out of the middle of a large lotus blossom, clothed with serried ranks of petals, which are executed in bold relief in three circles, with the tips of the outer ring slightly recurved. It is covered with a lid which is carved to simulate the capsular fruit, so that the seeds appear on the surface. A smaller half-expanded flower is seen at one side standing out in openwork relief, with a leaf beside it, and another leaf spreads out its veined surface below to enlarge its base of support. The stalks of the flowers and leaves are bound round with a reed, the long narrow leaves of which curl upward and outward in graceful folds, carved in openwork, so as to unite the different parts of the lotus spray.

## 408 MING DYNASTY (1368-1644)

SIX TABLE-SPOONS (*Shao-tzū*)

CHINA

Dimensions:  $4.97 \times 1.28 \times .62$  inches.  $12.6 \times 3.25 \times 1.6$  centimetres.

Weight: A = 1.313 ounces. 37.113 grammes

B = 1.284 ounces. 36.394 grammes

C = 1.186 ounces. 33.634 grammes

D = 1.192 ounces. 33.784 grammes

E = 1.185 ounces. 33.710 grammes

F = 1.200 ounces. 33.924 grammes

Specific gravity: A = 3.0035

B = 3.0015

C = 2.9994

D = 3.0027

E = 2.9897

F = 3.0011; hardness: 6.5. *Nephrite*

Color: Spinach-green with black specks

A set of six table-spoons, with deep egg-shaped bowls, and very concave handles finished at the end with a design of the sacred fungus. They closely resemble the six wine-cups of the same color that are described under No. 715. The material of which they have been

made is translucent, homogeneous and compact, with inclusions of a brilliant black mineral, apparently chromite.

Spoons of this kind are used in China for ladling soup or the like into the rice-bowl filled with rice.

## 409 MING DYNASTY (1368-1644)

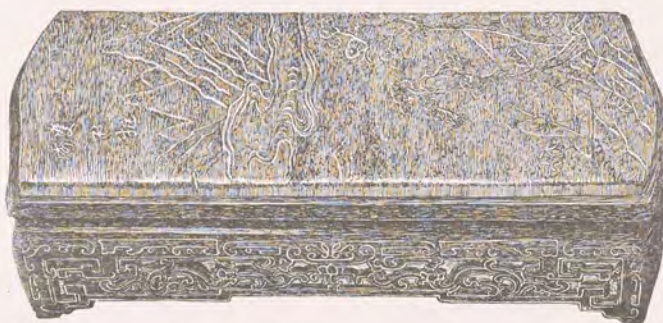
WRITER'S HAND-REST (*Nuan Shou*)

CHINA

Dimensions:  $7.19 \times 2.75 \times .25$  inches.  $18.2 \times 7.0 \times .6$  centimetres. Weight: 6.243 ounces. 177.000 grammes

Specific gravity: 2.9952; hardness: 6.5. *Nephrite*

Color: Spinach-green flecked with black



upper surface in slight relief with a mountain landscape vigorously executed with finished detail. A range of high peaks stands in the background half hidden by a bank of clouds. In the foreground an old man leaning upon a long staff is crossing a bridge, walking toward a straw-thatched hut built upon the rocks under the shade of two gigantic pines. The inscription, carved in relief at the top,

A hand-rest of oblong shape, with curving ends modelled in the form of a partially unrolled scroll supported on the rolls at the two sides. Decorated on the

quotes from an old poet, "Two pines tall and graceful." Carved in relief upon the under surface, in antique script, are the lines:

"The dark green stream flows by beneath the bridge,  
The ancient trees are hidden in clouds of mist;  
In the deep gloom, who can distinguish the shallows?  
There is only one house mid a thousand groves.

(Signed) Tzū-KANG.

The material is translucent, homogeneous and compact, with numerous inclusions of the black metallic substance, apparently chromic iron, which is found so frequently in nephrite.

予霞橋  
家雲迴  
帆歸  
誰水  
少云斜  
窗淺老  
月丹對  
林隔  
只煙

## 410 MING DYNASTY (1368-1644)

DOUBLE FLOWER VASE (*Hua Cha*)

CHINA

Dimensions:  $3.34 \times 7.19 \times 2.19$  inches.  $8.5 \times 18.2 \times 5.6$  centimetres. Weight: 13.881 ounces. 393.550 grammes

Specific gravity: 3.0105; hardness: 6.5. *Nephrite*

Color: Dark translucent seaweed-green

A miniature flower vase composed of a lotus leaf and lily standing side by side upon a branched stem of fungus, a charming design artistically modelled in openwork and perfectly finished.

The horizontal branch of the sacred fungus (*ling-chih*) which forms the base throws out six small heads at irregular intervals behind and below, before it terminates in the large head of characteristic form,





The material, which has taken a high polish, is translucent, homogeneous and compact, with some included black metallic particles which are apparently chromic iron.

which spreads out nearly on the same plane as the mouth of the floral cups. The lily stands next, with its threefold whorl of petals overlapping the sepals in the most natural way, all recurved with gracefully drooping tips. The leaves which spring from the base of the flower curl up spirally on either side so as to unite the different parts of the design in front. The lotus leaf stands erect at the end, with its margin gathered in at the top and folded at the edge, to make a little vase of elegant natural form, slightly flattened, with the veins indicated in relief outside. The leaf stalk curves underneath toward the base, where it is joined to two floral stems of the same plant, which culminate in flowers upon the exterior of the cup, the one in front half expanded, the one behind fully open so as to display the fruit-vessel and seeds.



# 411 TEMPLE FIGURE (*Yü Jên*)

MING DYNASTY (1368-1644)

CHINA

Dimensions: 11.97 × 6.12 × 4.72 inches. 30.4 × 15.5 × 12.0 centimetres.

Weight: 12 pounds 7.883 ounces. 5666.57 grammes

Specific gravity: 2.9840; hardness: 6.5. *Nephrite*

Color: Spinach-green flecked with black

A large standing figure of a man dressed in long flowing robes bound round the waist with a girdle, to which is suspended an oval pendant. He holds up in both hands, on the left side of the body, a round dish. The elongated ear-lobes and the *urna*-mark between the eyebrows give to the figure a Buddhist aspect; but these sacred attributes are both copied by the Taoists, to which religion we must refer it. The thoroughly Chinese face with its smiling contented expression, the hair gathered behind in a chignon, wrapped around with a cloth, and the costume are all Taoist. The figure must have come from a temple, where it officiated as an attendant of Shou Lao, the god of longevity, or of the fairy queen Hsi Wang Mu, with a pile of sacred peaches in the dish.

The material of the figure is translucent, and very compact in texture. Transmitted light shows more or less of a vein structure, with darker lines among inclusions of a black metallic substance, apparently chromic iron. On the back of the figure there are traces of the original weathered boulder-formation.

# 412 MING DYNASTY (1368-1644)

SEAL (*Yin*)

CHINA

Dimensions: 2.75 × 1.75 × 1.16 inches. 7.0 × 4.4 × 2.9 centimetres. Weight: 6.109 ounces. 173.204 grammes

Specific gravity: 3.0071; hardness: 6.5. *Nephrite*

Color: Spinach-green

An oblong seal surmounted by the figure of a dragon boldly projected in openwork carving. The dragon, with its single horn, its bifid tail, and retracted claws, is modelled in the typical form of the *ch'ih*, the ancient dragon par excellence, with none of the attributes of the *ch'ih-lin* (kylin) of the Chinese mythology, except the head. The base of the seal is beautifully engraved in relief with four characters in

antique script, the impression of which would be read in the order

3	1
4	2

: AN HSIANG TAN CHING  
("Of placid mind, calm and quiet").

The material of the seal is translucent and compact, and by transmitted light shows occasional small black inclusions, apparently of chromic iron. Much of the engraving seems to have been done with tiny hollow cylindrical drills, parts of more than fifty of the cores, so small as to be hardly visible to the naked eye, projecting in the bottom of the engraved work. It is an admirable example of Chinese seal-engraving.



413  
414

MING DYNASTY (1368-1644)

PAIR OF BOWLS (*Wan*)

CHINA

Dimensions: 2.84 × 7.94 inches. 7.2 × 20.2 centimetres. Weight: 413=1 pound 2.128 ounces. 513.935 grammes  
414=1 pound 1.448 ounces. 494.650 grammes

Specific gravity: 413=3.0038; hardness: 6.5. *Nephrite*  
414=3.0034; 6.5. *Nephrite*

Color: Dark seaweed-green with mottlings of very light green

A pair of large flaring bowls with circular rimmed feet. The color, very dark green when examined by reflected light, exhibits lighter patches in the darker green magma. These are generally more susceptible of a polish than the magma itself, and hence appear brighter. The general effect is that of a conglomerate porphyry, but by transmitted light it resolves itself into a very dark green magma in which there are patches of faint yellow, almost white, inclusions of nephrite. These measure from two to thirty millimetres across and are as distinctly isolated as are the white grains of quartz in a ferruginous conglomerate. The conglomerate effect is more apparent near the upper edge, where the two largest clear patches exist. In the bottoms of the bowls the patches are more massed together and are much broken into by larger veinings. In No. 414 the whitish pebbles which make up the structure are larger than in No. 413. The

two bowls are very similar and are probably cut from the same piece. They are quite unique and make a very interesting variation from the regular green jade. Small spots of chromic iron are more or less apparent throughout the entire mass. The white patches are very satiny, sinewy, and horny in their reflections in some cases. Others are darker and more lustreless.

The pudding-stone structure is probably caused by a different oxidation produced possibly by included minerals such as chromic iron or some other coloring matter in the pyroxene, so that one part of the material changed into the darker green jade and the other into the yellowish compact fibrous substance; or it may be that a less rapid degree of alteration may have resulted in the darker varieties and a more rapid alteration in the yellowish spots.

415  
416

MING DYNASTY (1368-1644)

PAIR OF DISHES (*P'an*)

CHINA

Dimensions: 1.72 × 10.34 inches. 4.3 × 26.3 centimetres. Weight: 415=1 pound 13.700 ounces. 842.000 grammes  
416=1 pound 13.924 ounces. 848.240 grammes

Specific gravity: 415=3.0141; hardness: 6.5. *Nephrite*  
416=3.0134; 6.5. *Nephrite*

Color: Dark seaweed-green with veinings of lighter shade and a staining of brown on one side

A pair of large flaring dishes with circular rimmed feet. They are both made of a remarkably perfect piece of nephrite and both cut from one boulder, which is apparent by the yellowish-brown staining on the side of one dish, being absolutely identical in its general configuration with that on the other.

The dishes are made of beautifully compact translucent material;

they are very sonorous, and though not highly polished they are susceptible of a high polish.

By transmitted light the material shows the main color to be seaweed-green, broken in all directions by veinings of a yellowish sinewy substance, and the entire mass is speckled by innumerable small black spots, probably of chromic iron. One of the yellowish seams or veins measures twenty centimetres in length.

417

MING DYNASTY (1368-1644)

A DOVE (*Ko-tzū*)

CHINA

Dimensions: 2.84 × 5.25 × 2.38 inches. 7.2 × 13.3 × 6.0 centimetres. Weight: 1 pound 4.457 ounces. 579.950 grammes

Specific gravity: 2.9696; hardness: 6.5. *Nephrite*

Color: Dark and light gray speckled and veined with black



feet executed in relief underneath, while the spray of flowers is white, so that it stands out very conspicuously upon a dark ground, carved in high relief with openwork.

The material, which is subtranslucent and compact, is a rare variety

The figure of a dove modelled in a natural attitude with the head turned back over the shoulders, carrying in its beak a branch of plum-blossom, which spreads out so as nearly to encircle the neck in front and to rest upon the folded wings behind. Carved out of a block of jade of different colors, the bird is a dark mottled gray, with the feathers engraved on the wings and tail, and the

highly prized by the Chinese. The gray color, a mixture of black and white, of the larger part of the piece is due to a pretty general dissemination throughout the mass of a black metallic substance, apparently chromic iron. That the magma is white is clearly shown by the plum-blossom branch carried in the beak of the bird, as it is entirely white with only an occasional black marking.

Birds are often figured bringing flowers and other symbols of longevity, and the dove is sacred in the East as well as in the West as a messenger from the immortals. The blossoming plum forms with the evergreen fir and bamboo the most common threefold emblem of longevity. It is a species of *Prunus* which has its gnarled trunk and leafless twigs covered with flowers before the winter is over, and is consequently taken as a symbol of flourishing old age. This flower is the motive of the so-called "hawthorn pattern," which is really a shower of plum-blossoms strewn upon a floor of cracking ice.



418 MING DYNASTY (1368-1644) SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions:  $2.41 \times 1.91 \times 1.31$  inches.  $6.1 \times 4.8 \times 3.3$  centimetres. Weight: 4.122 ounces. 116.860 grammes  
 Specific gravity: 2.9828; hardness: 6.5. *Nephrite*  
 Color: Very dark gray with lighter tones of gray on the front

A snuff-bottle of the usual form, but finely sculptured in bold relief with precipitous cliffs, a pine-tree, and a hunting-scene in which appear a mounted lancer in the act of spearing a fleeing hare, and a monkey which has taken refuge on a cliff. The action is very spirited.

The material is homogeneous and compact, and consists of a stratification of a very dark gray, apparently black, magma, in reality

white entirely filled with black metallic inclusions, evidently chromic iron. The face of the bottle, the mounted lancer, and the pine-tree show a nephrite that is perfectly free from all blemishes, being light gray, almost white, in character, while the hare is of the same character as the bedding of the piece—that is, a white magma colored gray by the presence of a large number of crystals. In other words, the piece is of three distinct stratified colors.

419 MING DYNASTY (1368-1644) SMALL VASE (*Ku*)

CHINA

Dimensions:  $3.75 \times 2.38 \times 1.16$  inches.  $9.5 \times 6.0 \times 2.9$  centimetres. Weight: 4.014 ounces. 113.809 grammes  
 Specific gravity: 2.9526; hardness: 6.5. *Nephrite*  
 Color: Very dark gray, almost black

A small vase in the form of a flattened beaker with projecting bulging body, a flaring neck expanding to a five-lobed mouth, and a narrow expanding foot hollowed out underneath. The decoration is that of the ogre's face, so common in the ancient bronzes, and the accompanying etched palm leaves stretching upward on the neck and downward on the foot.

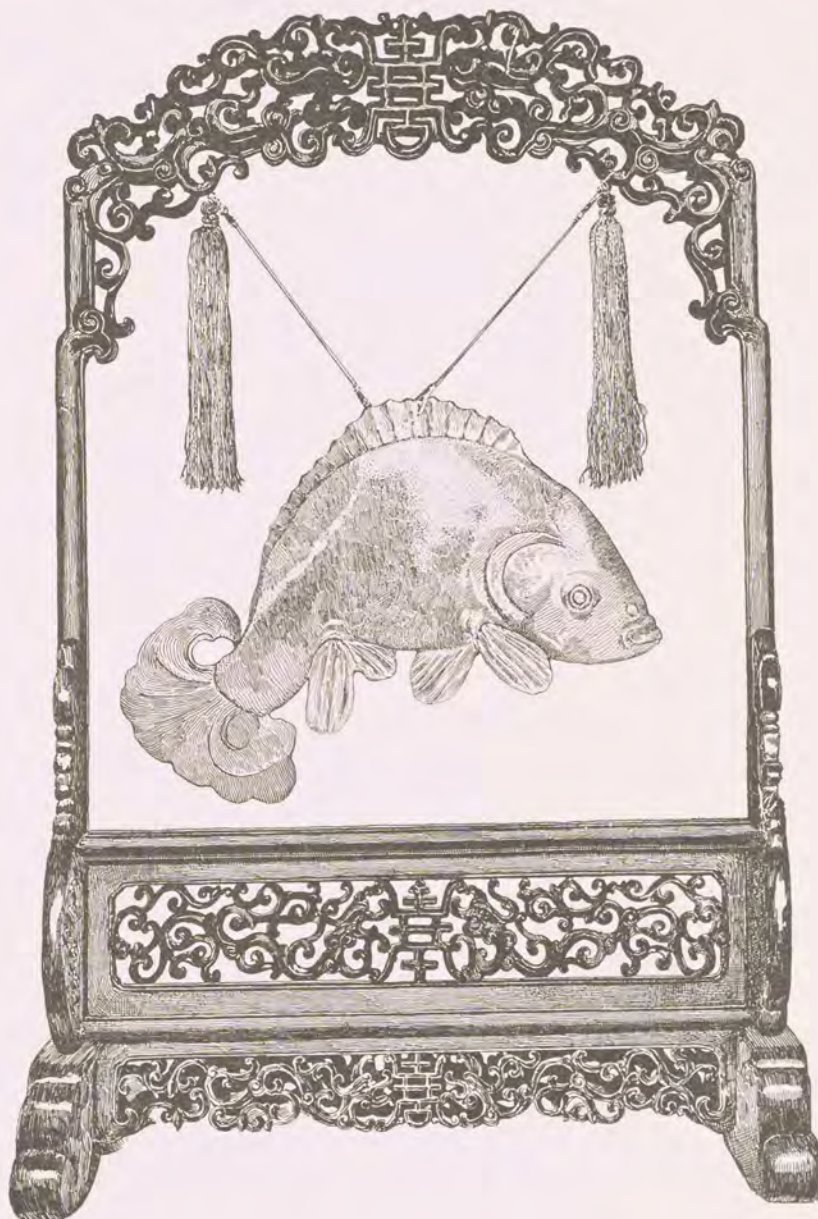
The material is of the kind known among the Chinese as *mo-yü*, "ink-jade," now rare. It consists of a magma of white jade so thoroughly impregnated with a black metallic substance, evidently chromite or oxide of manganese, as to assume a very dark gray or almost black color, patches of the white magma heavily flecked with black being distinguishable by transmitted light.

420 MING DYNASTY (1368-1644) TRIPOD INCENSE-BURNER WITH COVER (*Ting*)

CHINA

Dimensions:  $6.38 \times 8.12$  inches.  $16.3 \times 20.6$  centimetres. Weight: 3 pounds 11.887 ounces. 1697.800 grammes  
 Specific gravity: 2.9300; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with network of black veins. Mostly changed to grayish-ash tints by calcination

A vessel with two scrolled and perforated strap handles and three solid feet springing from monsters' heads carved in relief. The cover is surmounted with a ring-like foliated knob. Both vessel and cover are encircled by a broad band carved with conventional scrolls representing faces and eyes of ogres (*tsao-t'ieh*) projected from a background of rectangular fret. This piece has suffered much by fire.

421 FISH GONG (*Yü Ch'ing*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions:  $6.78 \times 9.69 \times .31$  inches.  $17.2 \times 23.7 \times .8$  centimetres.  
 Weight: 12.432 ounces. 352.457 grammes  
 Specific gravity: 3.3369; hardness: 7.0. *Jadeite*  
 Color: An intermingling of very translucent gray, blue, and green, with touches of russet

A broad flattened plaque, carved in the outline of a carp with bowed back so as to approach the usual angular shape of a hanging musical stone or gong. The details of the fish are indicated by engraved lines, repeated on the two sides, and the fins and spreading tail project in more or less naturalistic fashion all round the circumference. The dorsal fin is perforated with two holes for suspension by a cord to a frame of carved wood. A small ebony mallet is used to strike the stone when suspended.

The material is very translucent, homogeneous and compact.



422  
423

K'ANG-HSI (1662-1722)

PAIR OF BOWLS (*Fan Wan*)

CHINA

Dimensions: 2.84 × 6.81 inches. 7.2 × 17.3 centimetres. Weight: 422=12.617 ounces. 357.694 grammes  
423=14.873 ounces. 421.667 grammes

Specific gravity: 422=3.3364; hardness: 7.0. *Jadeite*  
423=3.3376; 7.0. *Jadeite*

Color: 422=Greenish-yellow  
423=Yellowish-green

A pair of bowls flaring at the top, where the rim is slightly recurved, and mounted on a broad prominent band-like foot, resembling in size and shape the bowls of porcelain made during the same reign. They

constitute a perfect pair, being of exactly the same size and shape, and are remarkable alike for their thinness and their sonorousness. Their original home was in the Imperial Summer Palace near Peking.

424

K'ANG-HSI (1662-1722)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions: 2.38 × 2.0 × 1.22 inches. 6.0 × 5.1 × 3.1 centimetres. Weight: 4.929 ounces. 139.747 grammes

Specific gravity: 3.3326; hardness: 7.0. *Jadeite*

Color: Pale apple-green and gray

A snuff-bottle in the form of a miniature flattened jar, with broad shoulders, narrow base, and short thick neck expanding into a solid jar-like mouth pierced for the usual tiny snuff-scoop. It is decorated in slight relief, front and back, with an intricate scroll made up of several intertwining dragons sprawling through wreaths of clouds.

425

K'ANG-HSI (1662-1722)

DOUBLE-GOURD PALLET (*Hu-lu Yen-tai*)

CHINA

Dimensions: 8.31 × 5.94 × 1.16 inches. 21.1 × 15.1 × 2.9 centimetres.

Weight: 1 pound 12.733 ounces. 814.580 grammes

Specific gravity: 3.3358; hardness: 7.0. *Jadeite*

Color: Variegated and brilliant translucent emerald-green tinged with light brown

A most beautiful example of artistic work, designed, after a naturalistic model, as a pallet for the water-colors of an artist, or the ink of a clever writer. It is perforated at one end with two holes, for suspension by a cord, as it is the custom for a Chinese scholar to hang up his pallet beside his writing-table when he is not using it. Hung up in this way before a window so that the light may pass through, the full effect of the marvellously vivid coloring is brought out, as well as the bold flowing relief of the carving, which is wonderfully finished in every detail and perfectly polished in every part. It is impossible to find words to describe the beautiful play of brilliant colors, or the pure emerald-green hues, which distinguish this remarkable piece. It is supposed fully to justify the inestimable value which the Chinese attach to this peculiar kind of stone. The form of the outline of the pallet is that of the double-gourd (*hu-lu*), the variety of the bottle-gourd, or *Lagenaria vulgaris*, which is so often used as a motive for art decoration. This is suspended by its stalk, concealed at each side by a flowing leaf. From the stalk spring branches, carved in openwork near the base, and spreading in tortuous relief all over the convex under-surface of the pallet. They cover this with a reticulation of leaves, tendrils, and fruit, executed in natural style, including eight little gourds, of which two are carved in openwork on each side of the waist, so as to serve as handles to hold the pallet when it is being used. The upper surface, polished perfectly smooth in the middle, is encircled round the rim by a raised ornamental border, formed of two branches bearing small leaves and coiling tendrils. These branches start from each side of the stalk at the top, and extend all round the pallet, so as nearly to meet at the bottom.

For an earlier illustration of this design see Dr. Bushell's pamphlet on "Chinese Porcelain before the Present Dynasty." There, under No. 42, is described a wine-pot of porcelain of the fifteenth century moulded in the same form and similarly decorated.

This remarkable specimen of jadeite came originally from the Summer Palace at Peking.





426 K'ANG-HSI (1662-1722)

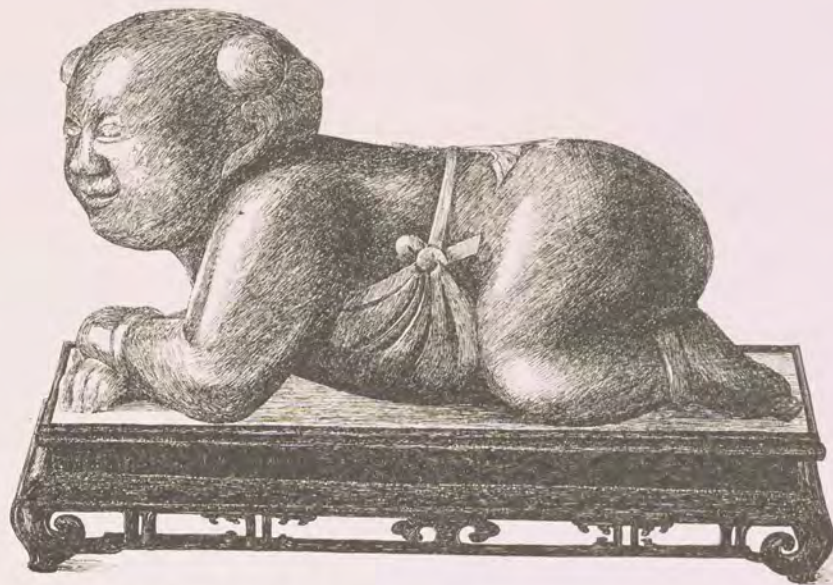
BABY PILLOW (*Wa-wa Chên*)

CHINA

Dimensions: 4.75 × 8.34 × 4.22 inches. 12.1 × 21.2 × 10.7 centimetres. Weight: 8 pounds .690 ounce. 3648.300 grammes  
 Specific gravity: 3.3233; hardness: 7.0. *Jadeite*  
 Color: Emerald-green of many shades, passing into pea-green mottled with paler spots, and slightly clouded with dead-oak-leaf and lavender

A pillow of massive form carved in the similitude of a crawling baby. The child rests upon all fours, with hands folded across in front, and has thick bracelets and anklets on the wrists and feet. Otherwise it is but scantily clad in a stomach-cloth gathered in folds at the sides and fastened round the waist with bands which are tied together behind in a loop so that the ends hang down. The face is modelled with an expression of smiling inanity; the head is shaven with the exception of two patches over the ears, where the hair is bound up in tufts in the ordinary fashion of young children in China.

This "cool pillow," *liang chên* as the Chinese call it, came from the Imperial Summer Palace near Peking. T'ang Jung-tso, in the chapter in his Discourse on Jade treating of articles made of jade, refers to



"pillows of jade for laying across the couch to snatch a dream of elegance at noon," and we have one here from the imperial divan. The Chinese are fond of hard pillows of a form adapted to support the neck so that the hair may not be ruffled, and most collections of Oriental porcelain for example contain a specimen or two. The cool pillow is supposed to be particularly good for preserving the eyesight. The shape of a *wa-wa*, an old name for baby (supposed to be a phonetic imitation of its cry), is a

favorite one, and earthenware pillows of this kind may be seen in every pottery shop. They are hollow inside, to be filled with iced water in summer or hot water in winter.

The crystalline structure of the material is clearly defined.

427

COVERED BOWL (*Kai Wan*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 3.91 × 5.09 inches. 9.9 × 12.9 centimetres.  
 Weight: 18.764 ounces. 531.998 grammes  
 Specific gravity: 3.3352; hardness: 7.0. *Jadeite*  
 Color: Light emerald-green mingled with lavender-gray

A small solid bowl of unusual form and design. Resting upon a substantial circularly rimmed foot, the body expands slightly at the mouth, which is bevelled inside to support the cover. This cover, of high vaulted form to compensate for the comparatively low shape of the bowl, is surmounted by a round projecting handle, carved in the shape of a lotus capsule with a convoluted rim and the seeds projecting upward upon its upper surface.

This splendid specimen of one of the most precious varieties of emerald-green jadeite is intermediate in size between a teacup and a rice-bowl, and could never have been designed for vulgar use as a utensil for food. It would be intended, judging from the character of the design, to be employed as a sacrificial vessel at a Buddhist shrine. It is one of the pieces which came into foreign hands after the looting of the Summer Palace at Peking in 1860.

By transmitted light the jadeite crystals of this homogeneous and compact piece are readily seen with the aid of a pocket lens.



428

QUADRANGULAR INCENSE-BURNER (*Fang Ting Lu*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 7.69 × 6.94 × 3.19 inches. 19.5 × 17.6 × 8.1 centimetres. Weight: 3 pounds 21.287 ounces. 1949.049 grammes  
 Specific gravity: 3.3344; hardness: 7.0. *Jadeite*  
 Color: Emerald-green with a few delicate patches of lavender-gray

An incense-burner of noble form and design, modelled after one of the ancient bronze sacrificial vessels which used to be made for the ancestral temple of Wên Wang, the celebrated founder of the Chou dynasty (who died 1135 B. C.), by one of his descendants. The peculiar form is figured in the books on ancient bronzes under the name of "Wên Wang's Ting." The *ting*, often translated "tripod," is usually a rounded vessel with three feet, but this quadrangular form

is also included in the same name, with the word *fang* (square) prefixed. These vessels were originally used to hold sacrificial food, incense having been introduced into China at a later date by the Buddhists. Of oblong shape, with gently rounded sides, the body bulges slightly toward the shoulder, where it is horizontally ridged as it recedes gradually to form a well-defined neck. It then expands again toward the prominent band surrounding the mouth, which is



bevelled inside to support the cover. The vaulted cover is crowned with four phenix heads, pointing to the four corners, to balance the four dragon heads from the mouths of which the feet spring below. The two handles at the sides are also carved in the form of larger phenixes, which balance the monstrous ogres delineated on the faces of the vessels. The feet, which are hollowed out behind at the base and curve outward below, are embraced above by the gaping mouths of monsters' heads which project from each corner. The body is similarly carved on the obverse and reverse faces. A vertical ridge, cut into four dentations engraved with a cross-line pattern, stretches in slight relief down the middle. The rest of the ground is filled by a rectangular scroll ground, interrupted by the dreadful features of the monstrous *t'ao-tieh*, with staring eyes and prominent fangs and a scaled body with rudimentary wings. This represents the devouring dragon of the storm with a background carved with the conventional *lei wén* or "thunder scroll." The sides are ornamented with a double rectangular scroll executed in relief upon a similarly fretted ground. To the middle of each side is attached the handle carved in openwork in the shape of a phenix with rudimentary body and large

head, the beak pointing outward, the crest elevated above the level of the rim so that it supports the cover. The concavity of the neck is ornamented, front and back, with a foliated fringe in slight relief; the rim is encircled outside by an engraved interrupted chain of rectangular fret, broken by the handles. The cover, decorated with horizontal chains of continuous fret, above and below, is pierced in openwork with a floral pattern composed of sprays of the tree-peony (*Paeonia moutan*), the distinctive flower of the sacred phenix. It is crowned in ascending steps, the upper steps being surrounded by a continuous chain of simple fret, exhibiting a fourth pattern, with a rectangular stud, which supports, as indicated above, a composite design of four phenix heads. These are placed back to back so as to point to each of the four corners. It is curious to observe the numerical balance of the component parts of the design. The dragons and phenixes in its composition show that it was specially made for the imperial palace and it is worthy of a conspicuous place.

This is a Summer Palace piece which came into foreign hands after the destruction of the palace by the forces of the Anglo-French Expedition of 1860.

## 429 K'ANG-HSI (1662-1722)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions: 2.53 × 1.66 × .5 inches. 6.4 × 4.2 × 1.3 centimetres.  
Weight: 1.665 ounces. 47.226 grammes  
Specific gravity: 3.3226; hardness: 7.0. *Jadeite*  
Color: Dark opaque emerald-green

A snuff-bottle of flat oval shape, very thin below, becoming thicker above, where the surface is carved in vertical ridges, which radiate as they disappear below. The peculiar form is intended to represent a bag gathered in at the top. The folds are continued over the rounded surface of the stopper, which is carved out of a piece of the same material, and mounted with a plain rim of silver. The out-

side of the bottle is carved in slight relief with peonies and other flowers, formally arranged so as to cover the lower smooth part of the bag, and so complete the decoration of the surface.



## 430

QUADRANGULAR VASE (*Fang P'ing*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 4.84 × 3.12 × 1.5 inches. 12.3 × 7.9 × 3.8 centimetres.  
Weight: 1 pound 8.831 ounces. 703.978 grammes  
Specific gravity: 3.2060; hardness: 7.0. *Jadeite*  
Color: A mottling of lettuce- and emerald-green, interspersed with small patches of greenish-gray; upon one side a large patch of color resembling mutton-fat in which there are delicate veinings of brown



A vase of flattened quadrangular form with rounded corners. The body, springing from a small foot, expands upward toward the shoulder, which is defined by a sharp ridge and then recedes toward the neck, expanding again at the mouth. The rim of the vessel, like that of the foot, is encircled by a plain band. The handles, which project on the sides of the neck, are carved in the shape of dragons' heads of archaic design. The surface of the vase is decorated with lightly etched floral designs. At the back a plum-tree is represented with a gnarled trunk stretching stiffly round the edge so that its outline coincides with a seam in the stone. This gives off a blossoming twig below, and another on the side of the vase, as it winds round to the front to decorate that with sprays covered with the same kind of flowers. Round the neck is lightly etched a band of palm leaves stretching upward in formal fashion.

The material is translucent, homogeneous and compact, and was evidently mined near the surface, being filled with numerous vein-markings and rents. On one side there is a large patch of color like mutton-fat, which is in striking contrast to the lettuce-green of the remainder of the vase. It penetrates the piece and appears in a smaller way on the other side. It is on this patch that the brown seams are most marked.



431 K'ANG-HSI (1662-1722)

ARTIST'S WATER-HOLDER (*Hsi-tzu*)

CHINA



Dimensions: 2.0 × 3.34 inches. 5.1 × 8.5 centimetres. Weight: 10.511 ounces. 297.985 grammes  
 Specific gravity: 3.3194; hardness: 7.0. *Jadeite*  
 Color: Shades of green, varying from very light green to very dark bluish-green, with yellow and rich dead-oak-leaf

A water-receptacle for a writer's table, in the form of a lotus seed-pod with two leaves tied to the stem, the leaves being of a rich dead-oak-leaf color somewhat mottled with yellow, representing dead leaves. The piece is in one stone, with a round hole in the centre of

the pod as if the central seed had been lost. The pod has been very cleverly hollowed out so that it is of an equal thickness throughout of one sixteenth of an inch, showing great dexterity in cutting.

This is a very unusual green, being strongly influenced by a blending of blue and by cloudings of lighter shades of green, yellow, and dark brown. By transmitted light it appears to be a rich grass-green, with some veinings which are very beautiful and are evidently the original boulder-weatherings of the jadeite mass.

432 K'ANG-HSI (1662-1722)

HANGING GONG (*Ching*)

CHINA

Dimensions: 6.25 × 10.5 × .25 inches. 15.9 × 26.7 × .7 centimetres. Weight: 1 pound 10.634 ounces. 755.090 grammes  
 Specific gravity: 3.3370; hardness: 7.0. *Jadeite*  
 Color: A general lavender tone shaded with aquamarine and snow

A gong of flattened semicircular shape, carved in openwork with symbolical designs of happiness and longevity: a round seal form of the *shou* character in the middle poised upon branches of polyporus fungus and supported by two peaches—all emblems of longevity—and a pair of bats above, emblems of happiness.

433 K'ANG-HSI (1662-1722)

## PAIR OF CUPS AND SAUCERS

CHINA

Dimensions: Cups=3.84 × 1.69 inches. 9.7 × 4.3 centimetres. Weight: 6.221 ounces. 176.365 grammes  
 Saucers=6.25 × 5.91 × .34 inches. 15.9 × 15.1 × 1.1 centimetres. Weight: 7.601 ounces. 215.498 grammes  
 Specific gravity: Cups=3.3329; hardness: 7.0. *Jadeite*  
 Saucers=3.3291; hardness: 7.0. *Jadeite*  
 Color: Bluish-green of lighter and darker shades

A pair of cups and saucers of unusual form. The cups are shaped like the half of a pomegranate, with the vine and some leaves and flowers extending on the outside in undercut relief. A bat, emblem of happiness, is just on the edge of each. The saucers are in the form of a large open leaf, with three smaller leaves and part of the vine at one end to form a sort of handle.

All four pieces are evidently from the same block of jadeite.

435 DOUBLE-DRAGON VASE (*Shuang Lung Ping*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 7.12 × 5.88 × 1.88 inches. 18.0 × 15.0 × 4.7 centimetres.  
 Weight: 2 pounds 7.192 ounces. 1111.100 grammes  
 Specific gravity: 2.9400; hardness: 6.5. *Nephrite*  
 Color: White changed to an opaque ashy tint by calcination

A flattened ovoid vase carved with panels on the body of conventional ogre (*fao-tieh*) pattern, projected on a background of scrolled clouds, and with ornamental borders of foliated and fret bands above and below. The handles are carved in the shape of jewelled ju-i sceptres. On the sides of the vase are represented in the strongest relief the forms of a pair of horned five-clawed imperial dragons pursuing the jewel of omnipotence, which is posed as a flaming ball upon the shoulder of the vase in front. The vigor and finish of the workmanship are remarkable. The cover is carved with *ch'ih-lung* on the same scrolled ground and a similar fret band round the rim.

This piece is almost thoroughly calcined by great heat, no longer showing any life in the stone.





436  
437

**BUTTERFLY (*Hu-t'ieh*)**  
K'ANG-HSI (1662-1722)

Dimensions: 4.25 × 2.28 × .22 inches.  
10.8 × 5.8 × .5 centimetres.  
Weight: 1.724 ounces. 48.872 grammes  
Specific gravity: 2.9510; hardness: 6.5. *Nephrite*  
Color: White with a faint greenish tint

An ornamental plaque to be sewed on the girdle or used as a pendant. It is in the form of a butterfly beautifully carved and polished. The lower pair of wings are connected with an openwork floral scroll, and on each wing is a sunken medallion in the centre of which is a pierced *swastika* symbol. The decoration is identical on both sides.

The material is translucent, homogeneous and compact. When viewed by a strong light it is seen to include a great many tiny lenticular markings that are a trifle darker and are evidently due to the stratification.

CHINA

**HORSE LYING DOWN (*Wo Ma*)**  
K'ANG-HSI (1662-1722)

CHINA

Dimensions: 6.09 × 8.34 × 2.97 inches.  
15.5 × 21.2 × 7.5 centimetres.  
Weight: 6 pounds 2.127 ounces. 2781.860 grammes  
Specific gravity: 2.9539; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

Figure of a horse, boldly modelled, represented as if about to rise from a recumbent position, with its head raised and turned backward. This beautifully polished solid piece of modelling is a companion piece to the water-buffalo described under No. 438.

The material is translucent, homogeneous and compact, with inclusions throughout the piece of a white, slightly more opaque form of nephrite.

438



439

**WATER-BUFFALO (*Shui Niu*)**  
K'ANG-HSI (1662-1722)

CHINA

Dimensions: 5.19 × 7.28 × 4.19 inches. 13.2 × 18.5 × 10.6 centimetres.  
Weight: 7 pounds 8.012 ounces. 3402.290 grammes  
Specific gravity: 2.9622; hardness: 6.5. *Nephrite*  
Color: White with light bluish tint and a few stainings of golden-russet

A recumbent water-buffalo, boldly carved, with a boy standing by its side resting his left hand upon one of the horns and holding a bunch of millet in his right hand.

On all sides of this piece there are stainings that are due apparently to limonite or hydrous oxide of iron. The material is translucent, homogeneous and compact, like that of the companion piece described under No. 437.



**BEAKER-SHAPED VASE (*Hua Ku*)**  
K'ANG-HSI (1662-1722)

CHINA

Dimensions: 11.94 × 6.41 × 2.97 inches. 30.3 × 16.3 × 7.5 centimetres.  
Weight: 3 pounds 7.473 ounces. 1572.640 grammes  
Specific gravity: 2.9556; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

Vase in the form of a flattened beaker with projecting, bulging body, a flaring neck expanding to a diamond-shaped orifice, and a narrow foot swelling slightly toward the base. On the upper rim behind there is carved in high relief with openwork an imperial five-clawed dragon with head raised erect, in pursuit of the precious jewel which stands out with effulgent rays proceeding from it upon the rim near the hindmost paw of the dragon. A single branching scroll of cloud is seen in relief







No. 440

BUDDHIST MONK

(*T'ang Seng*)

K'ang-hsi (1662-1722)

Nephrite











upon the vase near the fan-shaped tail of the dragon. The beaker, with plain unornamental surface, stands upon a rocky mass carved in the same piece. Upon one of the rocks stands a phoenix (*fêng-huang*), strongly designed and finely executed, reaching with its crest midway up the vase. From the surface of the rocks spring flowers, —the sacred fungus near the feet of the bird, a chrysanthemum near

its tail, and a peony-shrub behind,—surrounding the foot of the beaker, upon which they stand out in firm relief.

The material is translucent, very compact and homogeneous, and by reflected light shows a very delicate mottled surface and a perceptible trace of very delicate green color.

## 440 K'ANG-HSI (1662-1722)

BUDDHIST MONK (*T'ang Sêng*)

CHINA

Dimensions:  $6.28 \times 3.41 \times 2.16$  inches.  $16.0 \times 9.8 \times 5.5$  centimetres. Weight: 2 pounds .726 ounce. 927.777 grammes  
Specific gravity: 2.9399; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

Figure of a Buddhist monk, a representation of the most celebrated monk or *S'raman* (Chinese *sêng*) of the T'ang dynasty, the famous Chinese pilgrim Yuan-chuang, who travelled throughout the length and breadth of India in the reign of T'ai Tsung (627-649 A. D.), the second emperor of the T'ang dynasty. He started from China upon the long overland journey in the year 629 and returned in the year 645, bringing with him many sacred relics and 657 volumes of Buddhist scriptures, which he translated by order of the emperor—styled by Gibbon the Augustus of the East. The figure represents him seated in correct Buddhist attitude, cross-legged with folded hands resting upon the upturned soles of the bare feet, with elongated earlobes reaching down to the shoulders, his lips open as if expounding the doctrine. He is dressed in the full canonical costume of the period, the long robe open in front, showing the under-garment bound

round with a looped cord, and an elaborate necklace with strings of jewels hanging on the breast above, and the scarf or *Kashaya* flying outside in loose open folds over the shoulders. The hat, crowned with a ball, has the upright brim surrounded by eight carved lobes of foliated outline with a jeweled tiara in front, and the wrists are encircled by bracelets.

The material is compact, and by transmitted light shows some white subtranslucent and opaque markings and inclusions.

The record of this journey has been translated by Professor Stanislas Julien under the title: "Histoire de la vie de Hiouan-Tsang et de ses Voyages dans l'Inde" (Paris, 1853); also by Professor Beal: "Buddhist Records of the Western World," published in 1884 in Trübner's "Oriental Series."

441 DOUBLE-GOURD DISH (*Hu-lu Hsi*)

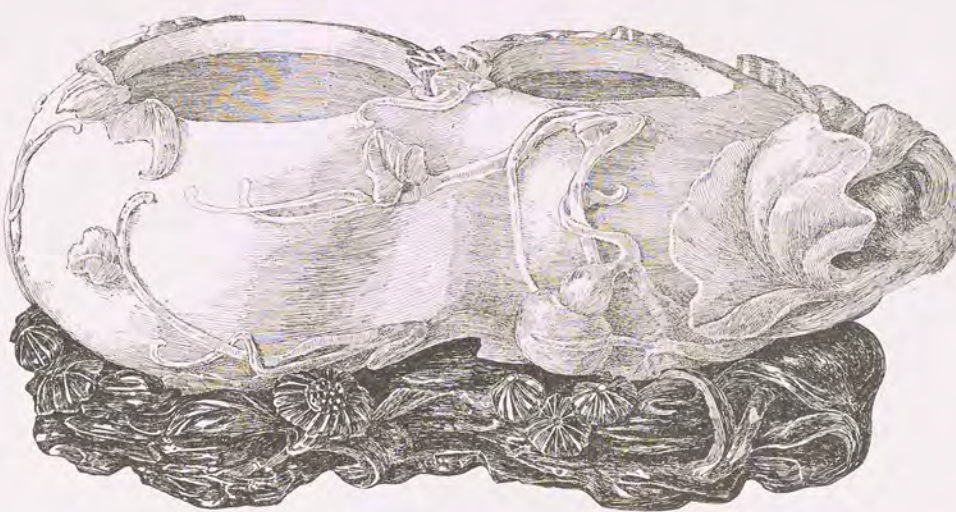
K'ANG-HSI (1662-1722)

CHINA

Dimensions:  $2.47 \times 8.12 \times 3.41$  inches.  
 $6.3 \times 20.6 \times 10.2$  centimetres.  
Weight: 2 pounds 1.748 ounces. 956.756 grammes  
Specific gravity: 2.9571; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A deep dish for holding water, in the form of a double-gourd (*hu-lu*) lying upon its side, the handle, carved in openwork, being formed of the stem of the vine, which winds naturally over the large gourd, bearing smaller gourds, leaves, and tendrils, carved in relief over the surface. The aperture is cut with a corresponding outline, and is divided into two by a bridge where a little branch of the vine crosses over. Opposite the handle a bat is carved in relief upon the gourd, a symbol of happiness. The gourd itself is a symbol of longevity.

The material is translucent and homogeneous, with an almost entire absence of inclusions of any kind. When a strong light is allowed to pass through it a delicate horizontal veining is observable.



## 442

FLOWER VASE (*Hua Ch'a*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions:  $4.5 \times 8.28 \times 1.41$  inches.  
 $11.4 \times 21.0 \times 3.6$  centimetres.  
Weight: 1 pound 4.474 ounces. 580.448 grammes  
Specific gravity: 2.9600; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A flower receptacle formed of a flattened lotus-leaf cup, in combination with which all the parts of the lotus are most realistically rendered. The underground tuberous-jointed stem (*ou*) is seen, with its pointed extremity cut across at the other end so as to exhibit its external structure. This has growing from it, in addition to the large leaf which forms the cup and which is frayed at the edge and perforated in the way so characteristic of the growing plant, a smaller peltate leaf, an opening blossom, and a flower from which most of the petals have fallen, so as to expose the cup-shaped fruit



with the seeds projecting from it at the top. Bound to the stem with a knotted reed is a flowering spray of the begonia, a second reed included in the knot with its leaves floating gracefully on either side. A flying swallow is represented in the foreground, carved in relief upon the large leaf. The lotus, apart from its beauty, is applied to many other uses in China and is much cultivated in shallow inland waters. Its tubers are edible, and also furnish a kind of arrowroot

or farina; the seeds too are palatable, and the leaves are gathered to be used for wrapping purposes. It is a variety of the *Nelumbium speciosum*, the flowers being usually either pink or white.

The material of the vase is translucent and compact, and the sinewy structure is well shown on the thinner edges. Inclusions or flaws in the original material have been very skilfully utilized by the artist to simulate worm-holes.

443 K'ANG-HSI (1662-1722) DOUBLE-PHENIX VASE (*Shuang Feng P'ing*)

CHINA

Dimensions: 7.22 x 7.94 x 2.53 inches. 18.3 x 20.2 x 6.4 centimetres. Weight: 3 pounds 3.829 ounces. 1469.345 grammes  
Specific gravity: 2.9510; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A vase with cover of flattened compressed form, with short wide neck and low base, divided into four lobes by wavy lines extending



from the top of the cover to the rim of the foot. The cover, crowned with a tall floral knob composed of four spreading leaves enclosing a peony-bud, is encircled by a band of conventional palm-leaf pattern

ornamented with antique scrolls. The body is modelled after an archaic sacrificial vase in the form of a pair of phenixes, the heads of which project boldly from the sides above the two loop-handles, while the bodies are united to form the vase, the wings and feathers being carved in low relief upon its surface so as to form a band of regular scroll design extended in a vigorous style. Each loop-handle has a movable ring suspended from it, all cut in one piece of jade.

The material is translucent, homogeneous, and compact. Professor Iddings's microscopic examination of thin sections of it showed a transition from the patchy structure found in some of the nephrites he had examined, into a uniform aggregation of minute fibres, both structures forming parts of the same rock. In the finer-grained portion he found groups of compact amphiboles yielding fan-shaped sections.

Walden's analysis, calculated by Clarke, gave the following results:

		AlNaSi <sub>2</sub> O <sub>6</sub>	FeNaSi <sub>2</sub> O <sub>6</sub>	Nephrite
Silica . . . . .	57.89	4.68	2.04	51.17
Alumina . . . . .	1.99	1.99		
Ferric oxide . . . . .	1.36		1.36	
Magnesia . . . . .	20.74			20.74
Lime . . . . .	12.60			12.60
Soda . . . . .	2.06	1.21	.53	.32
Water . . . . .	3.38			1.87
	100.02	7.88	3.93	86.70

Abstract	
Nephrite . . . . .	86.70
AlNaSi <sub>2</sub> O <sub>6</sub> . . . . .	7.88
FeNaSi <sub>2</sub> O <sub>6</sub> . . . . .	3.93
Excess water . . . . .	1.51
	100.02

444 K'ANG-HSI (1662-1722) ELEPHANT CARRYING VASE (*T'o P'ing Hsiang*)

CHINA

Dimensions: 6.59 x 3.59 x 2.0 inches. 16.7 x 9.1 x 5.1 centimetres.  
Weight: 1 pound 8.130 ounces. 684.077 grammes  
Specific gravity: 2.9742; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint, much stained superficially with russet

Carving of an elephant with a large vase upon its back. The elephant is covered with a brocaded saddle-cloth so that its fringe nearly sweeps the ground. The driver walking by its side, dressed in an ancient style of costume, carries a long-handled goad. The vase, of flattened oval form, is decorated in three bands separated by cords, carved with ornamental circles round the middle and foliated borders at the top and bottom. It is surmounted by a cover on which reclines a unicorn monster with the body of a lion and the horn growing backward from the forehead, guarding, as it were, the precious contents of the vase. This is supported at the front and back by two

figures of boys, one holding a medallion inscribed with the *yin-yang* symbol of ancient philosophy, the other a branch of some fruit.

The elephant is not found in China, but often used to be sent there from Burma and the neighboring countries as tribute, and it is usually represented in Chinese art carrying a vase supposed to be filled with all kinds of precious things.





445



FLAT BEAKER (*Pien Hua Ku*)  
K'ANG-HSI (1662-1722)

CHINA

Dimensions: 9.88 × 5.66 × 2.44 inches. 25.1 × 14.4 × 6.2 centimetres.  
Weight: 2 pounds 10.134 ounces. 1194.480 grammes  
Specific gravity: 2.9528; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A beaker-shaped vase with small foot, swelling body, and slightly expanded mouth, the section of which is a very flat oval doubly indented on each side. It is decorated with five dragons, large and small, vigorously carved in openwork and boldly projected relief. Near the largest dragon, which has a scaly body, prominent dorsal spines, and is four-clawed, stands out a large spherical jewel emitting effulgent rays. The other dragons are dispersed in various attitudes over the surface, the knobbed tails of two being intertwined. It is a powerfully executed piece and worthy of a flourishing period of Chinese art.

The material is translucent, very homogeneous and compact. On the reverse upper side of the piece there is a large vein of a regular ruin-like structure of a white, almost opaque, substance that probably is merely nephrite in a different form.

446



SCEPTRE (*Ju-i*)  
K'ANG-HSI (1662-1722)

CHINA

Dimensions: 18.00 × 5.09 × 2.38 inches.  
45.7 × 12.9 × 6.0 centimetres.  
Weight: 2 pounds 1.792 ounces. 958.000 grammes  
Specific gravity: 2.9620; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A large ju-i sceptre of the usual form, carved out of a single piece of jade of unusually pure and pellucid tint, in the form of a polyporus fungus, with the flat curved handle slightly widening toward the trilobate base, and rising at the end to be surmounted with the broad oval head, which has a four-lobed outline and is slightly pointed at the extremity. The head is carved

in relief so as to leave a plain band round the rim, across the top of which a bat spreads its widely extended wings, which curl inward at the tips.

Below the bat the character *shou* (longevity) is engraved in broad relief with a phoenix upon either side, its body executed in archaic scroll pattern of formal design. The two phoenix scrolls nearly meet below, so as to form an ornamental border with the bat, which surrounds the large longevity character in the middle. The three-lobed end of the handle is also carved, in slighter relief, with an ornamental design composed of symbols of happiness and prosperity, a bat with a fillet in its mouth suspending the *swastika* emblem, with a blossom of peony tied on either side of it. The tip is perforated with two holes, through which pass a silk cord strung with three coral beads, and ending in two tassels of faded imperial yellow color.

The handle is lightly engraved upon its upper surface with an inscription in archaic script. This begins at the top with the two large characters *Yü chih*, which mean "Made at the Imperial Manufactory," followed by the stanza in two vertical lines:

*Ching yuan lou feng nien*  
*T'ien hsia hsien ju i.*

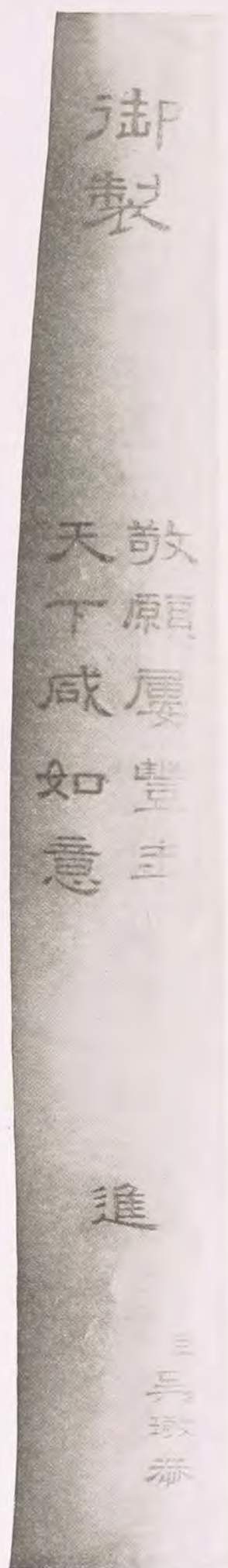
"With reverential vows for a succession of fertile years, and that throughout the world every wish be fulfilled!"

And below, with the name as it is usually written, in smaller characters:

*Ch'ên Wu Ching kung chin*: "Respectfully presented (to the emperor) by his servant Wu Ching."

The introduction of the two characters *hsien* and *feng* into this stanza would appear to indicate that it was presented to the emperor who reigned under this title, which means, literally, "Increasing Fertility." If this supposition is correct, the good wishes of the giver proved unavailing. The period (1851-61) was one of great trouble and national disaster. The Tai-ping rebellion swept over the country, carrying fire and sword in all directions, and threatening the existence of the Manchu dynasty itself; war was provoked with Great Britain and France, whose armies in 1860 marched on Peking, which surrendered; the Summer Palace (Yuan Ming Yuan) was sacked, and this magnificent ju-i, which was purchased at Paris, formed, no doubt, part of the spoil. The emperor himself had to flee, and died of a broken heart in the following year in his palace at Jehol in Mongolia.

The form of this peculiar sceptre is derived from that of a branch of the variegated woody fungus called *Polyporus lucidus* by botanists, *ling chih* by the Chinese. The name means literally, as we see it used in the above inscription,

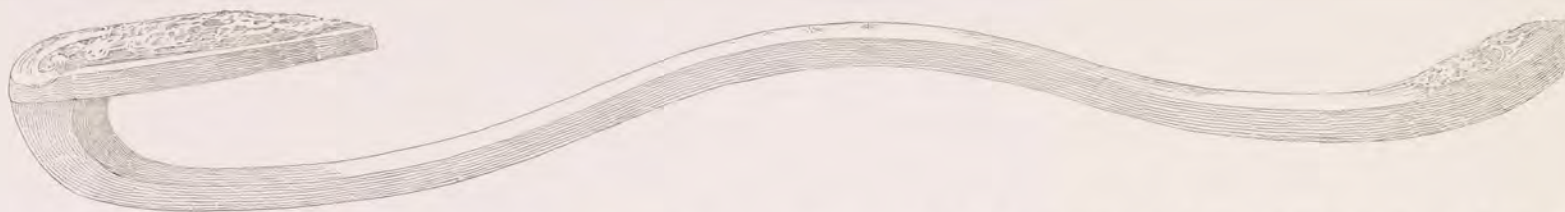




"As you wish!" or "Wishes fulfilled!" and it appears often to represent the fairy wand of Western story, and it is sometimes offered as a symbol of good wishes, as an appropriate gift on a birthday or other ceremonial occasions. The ju-i is especially used, however, as a sceptre of divinity, and we see it in the hand of a Taoist god in

ally made of carved wood or red lacquer, with three plaques of jade inserted and often inlaid with jewels. It figures also among imperial presents to high dignitaries as a mark of special distinction.

After his reception of Earl Macartney in 1793, the Emperor Ch'ien-lung enclosed one of these sceptres among the presents sent to



China occupying the place of the lotus held by the Egyptian deity or Indian Buddhist saint. In the palace of the emperor a sceptre is placed in every reception-room upon a table before the throne, usu-

George III of England, and there was a jade ju-i sent with the other gifts by the Emperor Kuang-hsi (the ninth of the Manchu dynasty) to Queen Victoria on the occasion of Her Majesty's jubilee.

447



K'ANG-HSI (1662-1722)

HEXAGONAL BEAKER (*Hua Ku*)

CHINA

Dimensions: 8.03 × 3.28 × 1.66 inches. 20.4 × 8.3 × 4.2 centimetres.

Weight: 1 pound 11.009 ounces. 765.727 grammes

Specific gravity: 2.9551; hardness: 6.5. *Nephrite*

Color: White with light greenish tint

A tall slender beaker-shaped vase of hexagonal form and flattened section, the body prominent and sharply defined, the foot low, the neck tall, slightly expanding, and graceful in outline; decorated in high relief and openwork with two figures, the two merry genii (*Ho-ho erh Hsien*) of Chinese fable. The one standing below upon a rock holds a round box, the "magic salver," from which, as he lifts the cover, rise banks of clouds with bats, the emblem of happi-

ness, flying therefrom; the other, standing high up in the clouds on the opposite side of the vase, holds the double-gourd, the "wonderful cruse," with its mouth downward, a stream of water flowing from it and splashing on the rocks below.

This is a remarkable piece on account of its bold relief sculpture, its pure color and texture, and its perfect finish. It is a companion vase to the one described under No. 448, being similar in style and of the same wonderfully translucent, homogeneous and compact material. This is well brought out when a strong light is allowed to pass through it.

448

K'ANG-HSI (1662-1722)

BEAKER-SHAPED VASE (*Hua Ku*)

CHINA

Dimensions: 7.12 × 3.34 × 2.56 inches. 18.1 × 8.5 × 6.5 centimetres.

Weight: 1 pound 5.428 ounces. 607.483 grammes

Specific gravity: 2.9443; hardness: 6.5. *Nephrite*

Color: White with light greenish tint

A four-sided beaker with prominent, well-defined body, a neck expanding to a diamond-shaped mouth with plain banded rim, and a low foot resting upon a rock carved in the same piece of jade; decorated with a celestial dragon and phenix, executed in very high relief and openwork so as to stand out boldly from the surface of the vase. The dragon, which is three-clawed, rests upon an arch of scrolled clouds, starting from the rocks on either side, so as to lift its head high above the rim. The phenix, which holds a spray of peony in its beak, stands out from the front of the vase opposite the dragon.

The material of the vase is translucent, homogeneous and compact, with a number of white opaque inclusions, apparently another form of nephrite, near the feet of the dragon. This is a companion piece to the hexagonal beaker described under No. 447. It is similar in style and is of the same material.



449

K'ANG-HSI (1662-1722)

MOUNTAIN LANDSCAPE (*Shan-tzu*)

CHINA

Dimensions: 7.88 × 10.47 × 2.75 inches. 20.0 × 26.6 × 7.0 centimetres.

Specific gravity: 2.9549; hardness: 6.5. *Nephrite*

Color: Very light pearly-gray with a band of light sage-green running through the centre

A large irregular block of white jade of fine quality, boldly carved in the form of a rocky mass with mountain landscapes on the two sides. On one side there is carved in deep relief a precipitous mountain

scene with a torrent in the valley below, fringed with pine, dryandra, and fig-trees, and pavilions enveloped in cloud amid the mountain peaks above. In the middle of the scene, along a road cut in the







No. 449

**MOUNTAIN LANDSCAPE**

*(Shan-tzu)*

K'ang-hsi (1662-1722)

Nephrite











steep mountain, an aged figure, clad in flowing robes and a Taoist head-dress, with hands thrust inside his sleeves, is riding upon an ox. This is Lao-tzū, the celebrated founder of Taoism, on his way to visit Hsi Wang Mu, the Queen of the Genii, in her splendid palace in the K'un Lun Mountains, in the far west of China. The venerable Lao-tzū is accompanied by an attendant on foot carrying his staff, on the top of which is slung a scroll, the manuscript of the "Tao Tê Ching," the Bible of the Taoist philosophers. From one of the terraces on a peak above a cloud has detached itself, and mounted upon this cloud stands the "Queen Mother of the West," with one of her sacred peaches in her hand, a female attendant holding her royal fan over her head, and a phoenix, the emblem of her divinity, standing by her side. She stands there as if awaiting the arrival of her distinguished visitor. The reverse side is carved with a mountain scene in the same deep relief, filled with various types of longevity. A pine-tree and a sacred fungus (*ling-chih*) grow from the rocks, there is a pair of deer on the hillside, and a couple of storks are seen flying through the air above.

This is a very large block of pure material, translucent, compact and homogeneous. As studied in thin section in the microscope, the specimen proves very clearly the origin of the fibrous amphibole or nephrite of which it is mostly composed. It is a microcrystalline to microcryptocrystalline aggregation of colorless fibres and flakes or scales, having a confused arrangement which in places approaches a more definite grouping in which the fibres lie in several directions. In each of these directions the fibres are approximately parallel and slightly curving, so that streaks or bands of fibres extinguish the light synchronously between crossed nicols. The polarizing colors of these minute fibres are grays of the first order. They grade into thicker and more compact crystals with higher interference colors. These crystals exhibit distinct prismatic cleavage in cross-section, and are sometimes automorphic in the prism zone. Through the mass are scattered fragmentary crystals of colorless jadeite. It is distinguished from the amphibole by its higher refraction, appearing to rise considerably above the body of the rock. Its double refraction is also higher. Its prismatic cleavage is also characteristic.

A lamellar twinning is present and in places is curved and apparently the result of strain. The amphibole is compact in some cases and fibrous in others. The transition is into compact amphibole, which frays out into curved fibres at the ends. It is evident that the fibrous amphibole composing this rock has been derived from colorless pyroxene or jadeite, remnants of which still exist in the rock. Another section of this rock shows the same microstructure, but none of the pyroxene remnants. Still another section of the same rock shows patches of fibres, most of which extinguish light at nearly one time. These are banded by parallel lines of fibres with a different orientation. These patches represent the extent of jadeite crystals that were twinned in the usual manner, each crystal having been altered to a mass of amphibole fibres, most of which are parallel to one another, a part lying at various angles.

Clarke's reduction of Walden's analysis, here given, shows the presence of 60.70 per centum of jadeite:

		Jadeite	Fe(NaK)Si <sub>2</sub> O <sub>6</sub>	Nephrite
Silica . . . . .	57.46	6.36	1.25	49.85
Alumina . . . . .	2.70	2.70		
Ferric oxide . . . . .	.83		.83	
Magnesia . . . . .	20.87			20.87
Lime . . . . .	12.49			12.49
Soda . . . . .	1.79	1.64	.15	
Potash . . . . .	1.64		.26	1.28
Water . . . . .	2.71			1.28
	100.49	10.70	2.49	85.87

## Abstract

Nephrite . . . . .	85.87
Jadeite . . . . .	10.70
Ægirite? . . . . .	2.49
Excess water . . . . .	1.43
	100.49

Nephrite =  $\text{Ca}(\text{H}_2\text{Mg})(\text{SiO}_3)_4$  approximately.

450

LOTUS VASE (*Lien-hua P'ing*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 8.06 × 7.47 × 2.25 inches.

20.5 × 19.0 × 5.7 centimetres.

Weight: 2 pounds 7.162 ounces. 1110.237 grammes

Specific gravity: 2.9437; hardness: 6.5. *Nephrite*

Color: White with light greenish tint and mottlings of white and light brown

Flattened vase of ovoid form and quadrangular section, with a high voluted cover crowned by two lotus buds, carved in openwork. The border of the vase and the rim of the neck are encircled with bands of rectangular fret. The broad base is boldly carved in openwork in the form of a bundle of lotus sprays, the stems of which are bound round by a reed. The vase rests upon one of the lotus flowers as a pedestal, its base being embraced by the ring of petals, while the other stems curl round it in all directions, reaching up to the neck, bearing upon them a profusion of buds and one large peltate leaf. Upon two of the petals nestles a pair of mandarin ducks (*Anas galericulata*), well known as an emblem of conjugal fidelity.

The material is translucent, homogeneous and compact, with several grayish mottlings and brown stainings. By transmitted light the veining is seen to consist of a more opaque white substance.





451 K'ANG-HSI (1662-1722)

ARTIST'S WATER-HOLDER (*Shui Ch'êng*)

CHINA

Dimensions:  $2.0 \times 5.28 \times 4.53$  inches.  $5.1 \times 13.4 \times 11.5$  centimetres.  
 Weight: 14.257 ounces. 404.210 grammes  
 Specific gravity: 2.9547; hardness: 6.5. *Nephrite*  
 Color: White with greenish tint



A water-vessel, of flattened globular form with small round mouth, designed in the form of the pâtra, the alms-bowl of the Buddhist mendicant. The design is intentionally heavy, so that it may stand upon the writer's table without fear of being upset. The dragon which stands out in such bold relief is powerfully designed in the style of pictures of the Sung dynasty, with finely engraved detail-work upon the supple coiling body and the three-clawed feet characteristic of the period. The precious jewel, emitting threefold rays of effulgence, projects solidly from the side of the pâtra opposite the dragon's head, while the body is balanced by a scroll mass of clouds executed in the same bold relief.

The pure translucent texture, the perfect polish, and the wonderfully bold relief-work make this a very remarkable piece. Viewed through the side with a strong light, traces are seen of a former crystalline structure, probably that of jadeite.

452  
453

K'ANG-HSI (1662-1722)

PAIR OF BOWLS (*Wan*)

CHINA

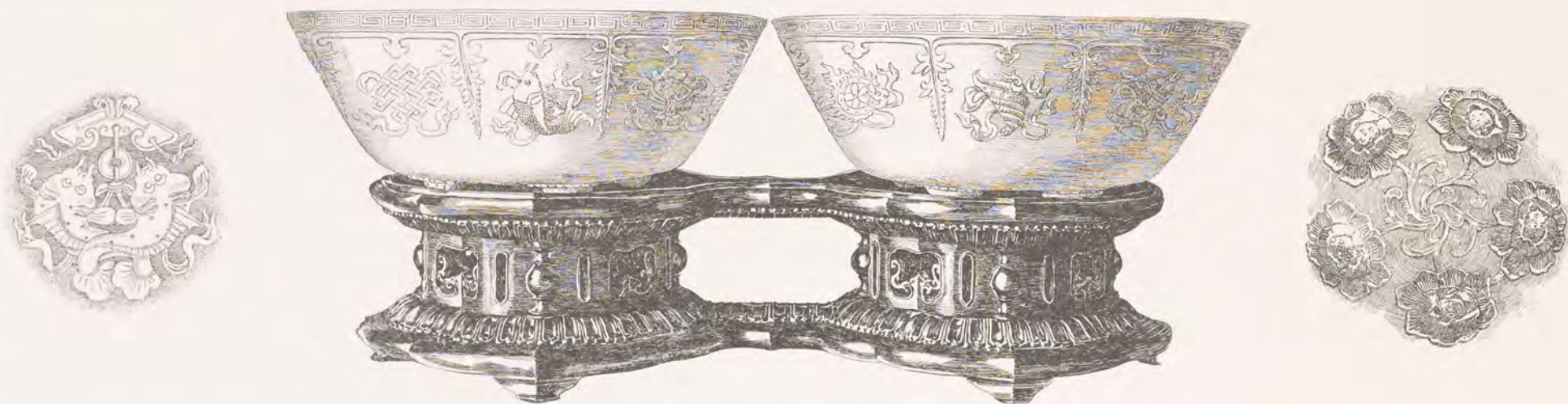
Dimensions:  $2.41 \times 6.75$  inches.  $6.1 \times 17.1$  centimetres. Weight: 452=9.468 ounces. 268.416 grammes  
 453=9.396 ounces. 266.383 grammes  
 Specific gravity: 452=2.9385; hardness: 6.5. *Nephrite*  
 453=2.9391; 6.5. *Nephrite*  
 Color: White with greenish tint

A pair of bowls exquisitely carved with formal floral and foliated patterns and symbolical emblems. They rest upon five low broad knobs modelled in the form of flowers, arranged in a circle round the base, with the outer ring of petals of each blossom carved in slight relief on the bottom of the bowl, the middle of which is covered with an interlacing pattern composed of the five floral stems, the abortive leaves upon which look rather like knobbed tendrils.

The outside is decorated round the rim with a band of the so-called Greek fret, with a line below foliated and curving so as to divide the

looped ribbons to a round perforated medallion, which is attached by another ribbon to a jade musical stone suspended above and decorated with flying fillets. This fish is called *nien*, a word which also means "year," and the design is known as *Nien nien chi ch'ing*, signifying "Good fortune, year by year!"

This is a typical example of the floral design described in Chinese books on art as that of *Hsi Fan lien* or the Indian lotus pattern. The cup-like fruit of the lotus is clearly indicated in the centre of the flowers. In more modern decoration the flowers become so degen-



surface of the bowl into eight panels, separated by perpendicular pattern of formal leaf-shaped design. These panels are filled with the eight Buddhist emblems with fillets, both in slight relief, passing round in regular order from left to right, viz., the wheel, enveloped in flames; the conch-shell, containing a jewel emitting rays of effulgence; the umbrella, the canopy; the flower, a conventional blossom with leaves like those of the peony; the vase, with a peltate lotus leaf as cover; the fish, a single perch with marked dorsal spines; and the endless knot.

The inside is decorated round the rim with a border of formal leaves pointing perpendicularly downward, and the bottom is occupied by a symbolical design in relief—a pair of large bull's-head fish tied by

erated that it is often difficult to say whether the lotus or the tree-peony supplies the motive. The passion-flower (*Passiflora carulea*), more recently introduced into China, is also called *Hsi Fan lien*, or Indian lotus, from the fancied resemblance to some of the old formal floral designs, and this only adds to the confusion.

The material of both bowls is translucent, homogeneous and compact. The entire mass seems, by transmitted light, to be made up of small crystalline grains suggesting the former probably jadeite structure. By allowing a strong light to pass through the thinner parts the sinewy texture of the nephrite and a faint opalescent reflection are to be seen.



454 K'ANG-HSI (1662-1722)

INCENSE-BURNER (*Kai Wan Lu*)

CHINA

Dimensions: 3.94 × 5.88 inches. 10.0 × 14.9 centimetres.  
 Weight: 1 pound 7.972 ounces. 679.625 grammes  
 Specific gravity: 2.9450; hardness: 6.5. *Nephrite*  
 Color: Very light gray with patches and veins of very dark gray

An incense-burner modelled in the form of a shallow three-handled bowl, standing upon a low circular rimmed foot, with a vaulted cover surmounted by a large flattened knob. The sides of both the bowl and the cover are elaborately and minutely carved in openwork with interlacing sprays of the tree-peony (*Paeonia moutan*) of natural design. The floral openwork pattern of the bowl is interrupted in three places at regular intervals for the handles, which project from a solid base as bosses, and are carved in openwork of similar design. The large flat disc which crowns the cover is also carved in complete openwork in the form of a branch of peony.

The material of both bowl and cover is translucent and compact, with a structure partly resembling vegetable wax. Some gray veinings through the centre of the pieces show that they were both cut from one block of nephrite. The texture is sinewy, and opalescent reflections are apparent.



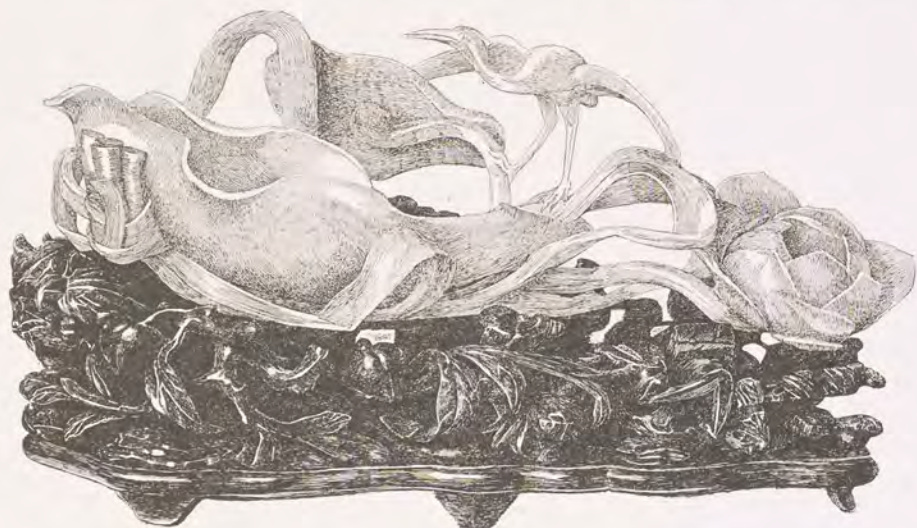
455 K'ANG-HSI (1662-1722)

ARTIST'S WATER-HOLDER (*Hsi-tzu*)

CHINA

Dimensions: 2.88 × 7.88 × 3.66 inches. 7.3 × 20.0 × 9.3 centimetres. Weight: 7.519 ounces. 213.188 grammes  
 Specific gravity: 2.9700; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A bunch of lotus of unusually open design, modelled in large flowing lines of extraordinary power and delicacy, with one large leaf having its rim folded up and curving inward so as to form a shallow dish, from which an open lotus flower projects opposite the solid handle formed by the bundle of stalks. Reeds wind freely round, and a



stork which has just alighted is shown with outspread wings, making the piece look like a work of art intended for ornament rather than for use. The bundle of stalks, the four sharply cut ends of which are seen at the top of the handle, is composed of the stems of the

two peltate leaves and of the large flower of the lotus, the fourth belonging to the reed, which affords the material for tying the bunch together, as well as the long linear leaves which curve so gracefully all around like waving fillets. One of the leaves is wound twice round the stems with its free end included, so as to make a wide loop; the rest are folded and twisted in all directions, filling up the intervals and connecting the different parts of the lotus. The flower is hollowed out in the centre as if to afford a second tiny receptacle for water. The stork is small in proportion to the size of the lotus and of the reed upon which it stands.

The piece is of special merit from the bold free treatment of the outlines and the delicate finished details of the design, and it must date from a period of good art like that of the reign of K'ang-hsi, if it be not older.

The material is translucent, very homogeneous and compact, and remarkably sinewy in its texture. When a strong light is allowed to pass through it an apparent crystalline marking is visible in the larger part of the vase, which includes a white subtranslucent substance, evidently jadeite.

The frequent association by the Chinese of the lotus and reed in their art work reminds one of the combination of the lotus and papyrus which is so frequently a motive in Egyptian artistic decoration.

456 K'ANG-HSI (1662-1722)

MINIATURE VASE (*Hua Ch'a*)

CHINA

Dimensions: 2.62 × 4.22 × 1.47 inches. 6.7 × 10.7 × 3.7 centimetres. Weight: 5.782 ounces. 163.940 grammes  
 Specific gravity: 2.9667; hardness: 6.5. *Nephrite*  
 Color: Light gray with a delicate greenish tint

Miniature vase modelled in the form of a spray of chrysanthemum, a large blossom of which, with the florets recurved at the tips, is hollowed out in the middle to make the little cup-shaped flower vase. The broad base is composed of the leafy stem with two smaller chrysanthemum flowers attached, carved in relief with openwork, giving a charming natural air to the design.

The material is translucent and compact, with occasional veinings, and is slightly sinewy in character. This is more apparent on the thinner parts.





457



FLOWER VASE (*Hua Ping*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 7.12 × 3.25 inches. 18.1 × 8.2 centimetres.  
Weight: 14.825 ounces. 420.315 grammes  
Specific gravity: 2.9687; hardness: 6.5. *Nephrite*  
Color: Light greenish-gray

A vase modelled in the shape of a lotus leaf growing upright so as to form a tubular hollow vessel with a slightly expanding mouth, which is the irregularly corrugated edge of the leaf. The leaf-stalk springs at the base from a reticulated network, composed of intertwining stems, which forms the support of the vase. From this openwork base spring flowers and leaves, which are carved in bold relief upon the surface of the vase, and form an effective and natural decoration. They include two blossoms of the lotus, one with most of its petals fallen so as to display the capsular seed-vessel, with a second smaller peltate leaf upon the same stem; two hastate leaves springing from the stem of another water-plant; and a couple of tall reeds curving up gracefully so as almost to reach the rim of the vase. An egret stands below with feet bridging two of the stems, and a pair of dragon-flies are flying across, carved in relief upon the vase, which is decorated, moreover, with slightly prominent lines exhibiting the natural furcate venation of the leaf.

The differences in the coloring, due to differences in the translucency of the mineral, have been very ingeniously utilized in the stalks which form the stand. The material is very sinewy.

458

K'ANG-HSI (1662-1722)

FIGURE OF LONGEVITY DEITY (*Shou Lao*)

CHINA

Dimensions: 5.75 × 2.47 × 1.66 inches. 14.6 × 6.3 × 4.2 centimetres. Weight: 1 pound 3.009 ounces. 538.922 grammes  
Specific gravity: 2.9490; hardness: 6.5. *Nephrite*  
Color: Yellow with a greenish tint and spots of very light brown

A Taoist figure of Shou Lao, represented as an aged man with smiling face, a high wrinkled protuberant forehead, and a long pointed beard reaching to his waist. The head is nearly bald, the sparse remnant of hair being gathered into a chignon wrapped round with a tiny cloth. Dressed in long flowing robes with loosely hanging sleeves, he carries a large peach in his right hand, in his left a long knotted staff from the gnarled top of which proceeds a little twisted branch. To this twig is suspended a scroll bound round with a fillet tied with bows above and below, so as to rest upon his shoulder, the ends of the fillet hanging down behind.

The material of this image is translucent, homogeneous and very compact. By transmitted light some quite subtranslucent inclusions, evidently of nephrite itself, and the rich yellow color of the piece are perceptible.

A chemical analysis by Walden and Clarke's reduction of the same are here given:

		R <sup>2</sup> /CaSiO <sub>6</sub>	Serpentine	Nephrite
Silica . . . . .	54.44	.62	.84	52.98
Alumina . . . . .	.82	.82		
Ferrie oxide . . . . .	.38	.38		
Ferrous oxide . . . . .	.34			.34
Magnesia . . . . .	25.88		.84	25.04
Lime . . . . .	13.70	.58		13.12
Soda . . . . .	.70			.70
Potash . . . . .	.54			.54
Water . . . . .	3.48		.25	
	100.28	2.40	1.93	92.72

Abstract	
Nephrite . . . . .	92.72
Serpentine . . . . .	1.93
R <sup>2</sup> /CaSiO <sub>6</sub> . . . . .	2.40
Excess water . . . . .	3.23
	100.28

The low silica indicates serpentine. Without it bases are in excess of silica.

*Shou Lao*, transliterated by French writers *Cheou Lao*, means the "Ancient of Ages," and is also known as *Shou Hsien*, "Genius of Longevity," and *Shou Hsing*, "Star of Longevity." One of the principal deities of the Taoist pantheon, he is universally worshipped by the Chinese, who set such store on long life. The Japanese form of the name is *Ju-ro*, and they make him one of their seven gods of good fortune. In China he is the third of the





three deities—Fu, Lu, Shou, the star-gods of happiness, rank, and longevity—so often figured in native art, Shou Lao being an incarnation of the star of longevity, which is located near the south pole of the heavens. Lao Tzū, the founder of the Taoist religion, is supposed to have been one of his incarnations, and the scroll which he usually carries represents the famous philosopher's book, the "Tao Tê Ching." The peach which he carries in his hand, or which stands in a dish near or held by an attendant sprite, is the sacred fruit which

confers the gift of immortality. His other attributes are the crane, deer, and tortoise; while the bamboo, plum, and pine, as floral emblems of longevity, generally fill in the background of the picture. Sometimes he is seen riding upon a crane or a deer; often seated on a rock near the seashore, across the waves of which are floating the eight genii (Pa Hsien) of Taoist fable coming to worship him; or, again, surrounded by a motley crowd of immortals bearing instruments of music and offering incense.

459 K'ANG-HSI (1662-1722)

ARCHAIC LIBATION-CUP (*Ku Chieh*)

CHINA



Dimensions: 6.53 × 5.59 × 1.97 inches. 16.6 × 14.2 × 5.0 centimetres.

Weight: 1 pound 15.148 ounces. 883.050 grammes

Specific gravity: 2.9532; hardness: 6.5. *Nephrite*

Color: Yellow with a very faint greenish tint

A tall vase-like cup modelled after an ancient bronze sacrificial vessel and decorated in an appropriate archaic style. Of irregular quadrangular form, with an oval flattened section, it has a broad mouth sloping upward from the handle and terminating in a spiral curve at the tip. The body is fashioned generally in the form of a winged grotesque head with some of the lineaments of the *t'ao-t'ieh* ogre, indicated in the outlines as well as in the decoration of the surface. The two wings curve upward on either side, carved in openwork, so as to make half-detached spiral bands projecting under the lip of the cup. The eyes are placed in the midst of conventional scrolls upon each side of the bulging part of the body, and the gaping mouth of the gluttonous monster seems to be the motive of the strangely convoluted and projecting base of the foot. The handle is another grotesque head, with the tongue protruding from its mouth curled around at the tip, and the wings carved in relief on the upper part of the vase. Upon the body of the cup below, a dragon projects in openwork relief, coiling round from the back, with two horns and the lizard-like body of the *ch'ih*, the dragon of old bronze design. The prominent rim round the mouth is encircled with a band of interrupted rectangular fret, and a portion of the foot is decorated with a similar band interrupted by the foot of the dragon.

The material is translucent and very compact, with one delicate yellow-brown vein running through the centre of the piece.

460 DOUBLE FISH-DRAGON VASE (*Shuang Yü-Lung P'ing*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 7.62 × 4.59 × 1.62 inches. 19.4 × 11.7 × 4.1 centimetres.

Weight: 2 pounds 6.383 ounces. 1088.149 grammes

Specific gravity: 2.9452; hardness: 6.5. *Nephrite*

Color: Dark gray grading down to lighter shades

A double flower vase, finely finished and exquisitely polished, modelled in the shape of two fishes with dragon-heads rising side by side from the water. The base is formed of a mass of waves rising into curling crests. The fishes stand upright, breast to breast, with their tails overlapping, as well as their front fins, which have become enlarged and developed into wings. The dorsal spines and the scales of the body are naturally carved, but the heads are those of two-horned dragons with goggle-eyes and long mustachios. Between the throats of the monsters the magic jewel stands out in relief, with its effulgent rays executed in openwork. The dragons' mouths gape widely and the bodies are hollow, as receptacles for flowers.

This is a remarkable piece as regards color as well as polish and the perfection of detail in the lapidary work. The material is translucent, homogeneous and very compact, with some subtranslucent inclusions which are perceptible by transmitted light.

A pair of fish is a common symbol of a happy conjugal union blessed with an abundant progeny. The winged fish-dragon is often alluded to in legends, one of which relates that the sturgeon of the Yellow River, which makes the ascent of the stream each year, in the spring, becomes transformed into a dragon if it succeeds in passing the rapids of the famous gorge called *Lung Mên*, the "Dragon's Gate." This transformation has become typical of the success of graduates at the literary examination and of their names being included in the "Dragon List," as the published roll is called.





461 K'ANG-HSI (1662-1722)

IMAGE OF BUDDHA (*Fo Hsiang*)

CHINA



Dimensions:  $5.31 \times 3.75 \times 2.75$  inches.  $13.5 \times 9.5 \times 7.0$  centimetres.  
 Weight: 2 pounds .957 ounce. 934.330 grammes  
 Specific gravity: 2.9578; hardness: 6.5. *Nephrite*  
 Color: Light gray clouded and veined with very dark gray, almost black

A figure of Sakyamuni Buddha modelled in the usual form, seated cross-legged, with folded hands resting upon the upturned soles of the bare feet. The hair is arranged in formal curls around the sacred cranial protuberance, which projects prominently at the top of the head, and the ears have the usual elongated lobes. The long robe, which has only one sleeve, the left, is cut low in front, showing the undergarment bound round with a knotted cord, leaving the right arm bare, the shoulders being covered by the loose folds of the scarf, or *Kashaya*, which hangs down behind.

The material is subtranslucent and homogeneous. The large black patches on the back prove, by transmitted light and by means of the glass, to be very tiny specks of a black metallic substance, apparently chromic iron.

462 K'ANG-HSI (1662-1722)

VASE WITH COVER (*Kai P'ing*)

CHINA

Dimensions:  $9.06 \times 5.78 \times 2.47$  inches.  $23.0 \times 14.7 \times 6.3$  centimetres. Weight: 2 pounds 8.345 ounces. 1143.771 grammes  
 Specific gravity: 2.9359; hardness: 6.5. *Nephrite*  
 Color: Yellowish-gray with longitudinal cloudings of dark gray

A vase of good form and perfect finish, decorated with dragons carved in such high relief with openwork as to be almost detached from the surface, thus fully displaying the elegance of its shape.

The vase, which is of oval outline with a flattened rounded section, slopes gently in toward the neck, which expands again slightly to end above in a plain, solid, well-marked band round the rim. From the sides of the neck, under the rim, spring two handles, which are carved in openwork in gracefully curved scroll designs. The foot, springing from the rounded outline of the body, spreads widely toward the base, which is encircled by a plain rim and excavated underneath. From each side of the foot projects a pile of rocks, surrounded by sea waves below, and supporting a pair of dragons represented as having just emerged from the water to mount into the clouds in pursuit of the jewel of omnipotence. This jewel stands out in full relief upon the surface of the vase, midway between the heads of the two dragons, as a globe emitting flaming rays of effulgence. The clouds are indicated by scrolled masses scattered about at irregular intervals, boldly detached as if floating in the air. The dragons, together with the smaller one which bestrides the cover, are of the usual archaic design, with retracted claws and with lizard-like

bodies terminating in long tails with bifid ends rolled round like scrolls at the tip. The large dragon on the right, which has two curved horns, a thick mane, and long mustachios, has one leg resting upon a rock and two of the others supported by clouds in the air. The other dragon, upon the left, which is of more slender form, with only one horn and no hair upon the neck, is coiling round upon the rocks from the back, as if about to leap into the air. The cover, of plain flat form with bevelled outline, is surmounted by a square open handle cut in the form of a little bench with scroll feet, upon which is crouched a small one-horned dragon, intended, no doubt, to represent a young one belonging to the pair depicted upon the body of the vase below.

The more one studies this piece the more one wonders at the boldness of design, and at the deftness of hand, delicacy of touch, and patience of the lapidary.

The material of the vase is translucent, homogeneous and compact, with a broad perpendicular veining in part of black metallic particles, evidently chromic iron, which are visible also throughout the piece and impart to it its grayish color.

463 K'ANG-HSI (1662-1722)

A DUCK (*Ya-tzu*)

CHINA

Dimensions:  $5.03 \times 9.84 \times 4.12$  inches.  $12.8 \times 25.0 \times 10.5$  centimetres. Weight: 8 pounds 14.284 ounces. 4033.670 grammes  
 Specific gravity: 2.9683; hardness: 6.5. *Nephrite*  
 Color: Gray of many shades speckled and veined with black

The figure of a duck swimming, carrying in its beak a bunch of lotus and other water-plants. The duck is boldly designed and modelled in a natural attitude, with the head thrown back, the feathers indicated by carving, the webbed feet executed in full relief beneath. The lotus, with a large peltate leaf, a fully opened blossom displaying the capsular fruit with the seeds visible on the top and a half expanded bud, curves back so as to be supported upon the back of the bird, standing up in high relief and finished detail. The spray of lotus is fringed by other plants, including a thick hastate leaf and long linear leaves of reeds, which droop gracefully upon either side.

The material is translucent in the thinner parts, otherwise almost opaque. The entire mass is filled with the black metallic substance, evidently chromic iron, which, with its white magma, gives the piece its gray color.





464 K'ANG-HSI (1662-1722) DOUBLE-DRAGON SEAL (*Shuang Lung Yin*)

CHINA

Dimensions:  $3.34 \times 4.16 \times 4.16$  inches.  $8.5 \times 10.6 \times 10.6$  centimetres. Weight: 3 pounds 12.329 ounces. 1710.300 grammes  
 Specific gravity: 2.9523; hardness: 6.5. *Nephrite*  
 Color: Sage-green

An imperial seal of rectangular shape with square base, surmounted by a solid handle boldly carved in the form of a pair of coalescing dragons. The dragons, of the orthodox imperial form, with two horns, and five claws on each foot, have their scaly bodies closely



pressed together and interlacing below, so that the hind feet and tails project on either side. The scrolled base of cloud upon which they rest is perforated and strung with the original silk cord, which is knotted round and shows in its unfaded portion the yellow color sacred to the emperor.

The legend, carved in bold relief upon the under surface, consists of four characters in an archaic script. The seal impression would

read in this order 

3	1
4	2

 — *Ching Ming Yuan Pao*, which means "Imperial Seal of Ching Ming Yuan."

The material is translucent, compact and homogeneous, with several prominent veinings and inclusions of an opaque white substance, apparently nephrite.

*Ching Ming Yuan*, which means literally "Calm and Bright Park," is the name of one of the Imperial Summer Palaces which fringe the hills west of Peking. It is about ten miles from the city wall, and may be distinguished by the prominent pagoda which crowns the hill inside the *Yu Chuan Shan*, or "Jade-Spring Hill," the principal source of water supply for the capital. This picturesque spot was formerly the residence of the Emperor Chang Tsung of the Chin dynasty, in whose reign the caves were carved with Buddhist bas-reliefs, and afterward of the Mongol Kublai Khan in the thirteenth century. The Emperor K'ang-hsi, of the reigning dynasty, was the first to give it the name of Ching Ming Yuan, when he enclosed the "Jade-Spring Hill" within the circuit of a new wall, and this seal was doubtless made for him to stamp the edicts issued during his



residence there. This was one of the palaces burned during the Anglo-French Expedition in 1860, and the seal must have been taken away at that time.

## 465 K'ANG-HSI (1662-1722)

LOTUS-LEAF DISH (*Ho-yeh Hsi-tzu*)

CHINA

Dimensions:  $1.66 \times 6.97 \times 4.94$  inches.  $4.2 \times 17.7 \times 12.5$  centimetres. Weight: 1 pound 2.566 ounces. 526.358 grammes  
 Specific gravity: 2.9929; hardness: 6.5. *Nephrite*  
 Color: Olive-green

A little water-dish of oval shape, fashioned in the form of a lotus leaf with up-tilted margin and folded recurved edge. It is decorated with the natural venation, engraved inside, executed in relief outside, the veins radiating from the centre and subdividing toward the rim. The thick pulpy stalk is curled round underneath the peltate leaf, which is also ornamented in strong relief with interlacing sprays, composed of a lotus flower and a smaller leaf interwoven with a branch of reed. The long leaves of the reed spread upward and wind gracefully over the edge of the dish, where they project in openwork relief. A swallow (*yen*) has just alighted and is poised with extended wings upon the folded margin of the lotus leaf with a branch of the reed in

its beak. Its mate is perched opposite in the middle of the dish. Both are fully outlined in undercut relief, with the feathers naturally indicated on their pointed wings and forked tails.

This design conveys to the Chinese mind ideas of peaceful calm, according to the proverb *Hai yen ho ch'ing*, "A still sea and a clear river," because the monosyllable *yen* means "still" as well as "swallow," and *ho* "river" as well as "lotus."

The material is translucent, homogeneous and compact, and has taken a high polish. There are inclusions of a black metallic substance, apparently chromic iron.



466 K'ANG-HSI (1662-1722)

SEAL CASKET (*Yin Ho*)

CHINA

Dimensions: 4.88 × 3.75 × 3.75 inches. 12.4 × 9.5 × 9.5 centimetres.  
 Weight: 33.711 ounces. 955.750 grammes  
 Specific gravity: 2.9836; hardness: 6.5. *Nephrite*  
 Color: Olive-green with flecks of lighter green

An elaborate seal casket comprising, first, a square shallow box or compartment with projecting rim at the base, on which rests a taller square cover; second, a round box resting upon this square cover and of one piece with it; and, third, the cover for this, surmounted by a dragon, each cover encasing the whole of the corresponding box. The square shallow compartment is intended to hold the large seal, and the round box above it the vermilion and pad. The lower box, of square form, has the corners of the projecting rim angled off and the border outside encircled with a line of separate scrolls in slight relief. Low-shaped feet project at the corners beneath. The corners of the box are slightly rounded. The outlines of the square cover which encases the lower box are angled off and carved with a scroll pattern like that on the projecting rim below, so that the sides are all surrounded with the same ornamental border. These sides are filled with an engraved diapered ground of cloud design in diamonds, interrupted by twelve circular panels, which stand out in low relief, three on each side. These panels contain symbols—the twelve *chang*,<sup>1</sup> or ornaments, which used to be embroidered upon official robes of rank in ancient times. These are figured from left to right as follows:

- |                                                                                                                                                                                               |                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 1 <i>jih</i> , the sun, represented by the three-legged "bird of light" ( <i>yang niao</i> ), described as the occupant of the sun by the Taoist philosopher Huai Nan Tzu, who died 122 B. C. | 8 <i>tsao</i> , the aquatic herb, some kind of water-plant. |
| 2 <i>yüeh</i> , the moon, represented by the hare ( <i>f'u</i> ) engaged with pestle and mortar pounding the elixir vitae.                                                                    | 9 <i>huo</i> , flames of fire.                              |
| 3 <i>hsing ch'ên</i> , the stars, including planets and constellations.                                                                                                                       | 10 <i>fên-mi</i> , grains of rice.                          |
| 4 <i>shan</i> , mountains.                                                                                                                                                                    | 11 <i>fu</i> , the hatchet or battle-axe.                   |
| 5 <i>lung</i> , the dragon.                                                                                                                                                                   | 12 <i>fu</i> , the ornamental symbol.                       |
| 6 <i>hua-ch'ung</i> , the "variegated animal," understood to mean the pheasant.                                                                                                               |                                                             |
| 7 <i>tsung-yi</i> , the sacrificial cups, one of which has the figure of a tiger upon it, another a kind of monkey. The animals represented here, however, look more like a pair of rats.     |                                                             |
- The circumference of the round cover which encases the upper box is surrounded with the eight Buddhist symbols of good augury, *pa chi-hsiang*, carved in relief with waving fillets in the following order:
- |                                                                              |
|------------------------------------------------------------------------------|
| 1 <i>lun</i> , the wheel of the law, or <i>chakra</i> , enveloped in flames. |
| 2 <i>san</i> , the umbrella.                                                 |
| 3 <i>chang</i> , the endless knot.                                           |
| 4 <i>lo</i> , the conch-shell, or <i>sankha</i> .                            |
| 5 <i>hua</i> , the flower, a full-blown peony.                               |
| 6 <i>p'ing</i> , the vase, with a lotus leaf as cover.                       |
| 7 <i>yü</i> , the fish.                                                      |
| 8 <i>kai</i> , the canopy.                                                   |



The cover, decorated with a band of Greek fret round the lower rim, is surmounted by a five-clawed imperial dragon, boldly carved in openwork so as to project as a prominent open medallion, with its body coiled round beneath its huge two-horned head with staring eyes and bristling hair, which is supported upon the four legs like pillars. The pearl of omnipotence, with flaming effulgent rays, is in front of the dragon's mouth, and the intervals of the design are filled in with cloud scrolls. This dragon-handle shows that the seal casket was made for the use of the emperor.

This seal casket is one of a pair used in the Summer Palace near Peking until the looting and destruction of the palace in 1860, when they were carried to England, where at a later date this one was secured for the Collection.

The material is homogeneous and compact, with inclusions of a black metallic substance that is evidently chromic iron.

MOUNTAIN SCENE (*Shan-tzu*)

K'ANG-HSI (1662-1722)

CHINA

Dimensions: 9.62 × 10.44 × 2.16 inches.  
 24.4 × 26.5 × 5.5 centimetres.  
 Weight: 12 pounds 14.601 ounces. 5857.02 grammes  
 Specific gravity: 2.9857; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with a pale green mottling

A flattened block of irregular square outline, with rounded corners, cut off at the base so as to stand upright, and decorated on both sides with mountain scenes.

The front is carved in bold relief to represent a mountain pass with a steep road winding across and returning, in angular fashion, till it ends at the gate of a fortress above. The gate is half open, the wall above is crenellated and extends right across the pass, and beyond it



<sup>1</sup>The twelve *chang* are enumerated in the Shu Ching, the classical Book of History, in the fourth of the Books of Yu (Legge's Chinese Classics, Vol. III, Part I, pp. 80, 81). This was in the reign of the Emperor Shun, in the twenty-third century before the Christian era, according to the official chronology of China. They are described even at this early period as "the emblematic figures of the ancients, the sun, the moon, the stars, the mountain, the dragon, and the flowery fowl, which are depicted on the upper garment; the temple cup, the aquatic grass, the flames, the grains of rice, the hatchet, and the symbol of distinction, which are embroidered on the lower garment—all displayed with the five colors to form the official robes."

The sacrificial robes of the emperor are said to have had all these twelve figures painted or embroidered upon them, emblematic of his various attributes. The *kung*, or ducal princes, were restricted from the use of the sun, moon, and stars; the *hou* and *po* (marquises and earls) were further restricted from the mountain and the dragon; and by a gradually decreasing restriction five sets of official robes were made, so as to distinguish the grade of rank of the wearer.

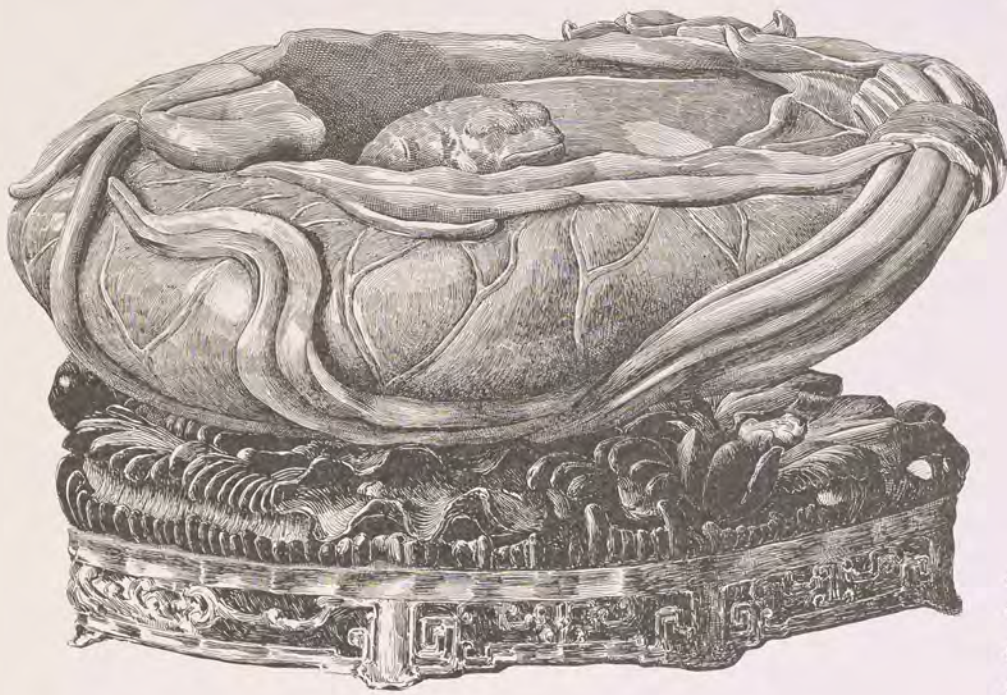


are seen tiers of pillared roofs and growing palms, indicating the interior of a city. Two soldiers on horseback are approaching the fortress, and on the lower stretch, in the foreground, are three other mounted figures, the central one of which, with a plume of peacock's feathers drooping from his hat, is the general in command, the other two being attendants carrying the insignia of his rank—an umbrella-like canopy and a square banner.

The back is filled with a formal mountain scene in slighter relief, with a stairway cut in the hillside, and a solitary deer on a rocky platform in the foreground. Among the trees are pines and dryandra; a row of palm leaves and a few trailing branches of wild vines fill in the corners.

The material of the block is translucent, homogeneous and compact, and evenly marked with a lighter, more opaque white and gray veining, evidently also nephrite.

468



LOTUS-LEAF DISH (*Ho-yeh Hsi-tzu*)  
K'ANG-HSI (1662-1722) CHINA

Dimensions: 3.72 × 10.41 × 8.97 inches.  
9.4 × 26.4 × 22.8 centimetres.  
Weight: 7 pounds 8.718 ounces. 3422.290 grammes  
Specific gravity: 2.9718; hardness: 6.5. *Nephrite*  
Color: Very dark sage-green

tied with a reed into a bundle with two flower stems of the same lotus (*Nelumbium speciosum*). These stems curl under the leaf to lift up their flowers on opposite sides of the rim, where they stand out in prominent relief, the one just expanding, the other with most of its petals dropped, exposing the fruit, with its seeds visible at the apex.

The reed with which the bundle is bound round spreads its long linear leaves in every direction above and below the dish, upon which they are carved in bold relief with openwork. A spotted toad (*ha-mo*) is squatted inside, with prominent eyes and tuberculated body, finished in all its natural details—an appropriate adjunct to the water-plants.

The mineral is subtranslucent and compact, with only occasional small veinings or inclusions.

A water-dish for the artist's table, modelled in the form of a lotus leaf with the margin turned up and rolled inward. The leaf is broadly and firmly designed, and covered outside with the natural venation executed in relief. The leaf stalk curves upward from the base until it nearly reaches the margin, where the free end of the cut stalk lies

469 ROUND SCREEN (*Yuan Ch'a P'ing*)  
K'ANG-HSI (1662-1722) CHINA

Dimensions: 11.53 × .69 inches. 29.3 × 1.8 centimetres.  
Weight: 5 pounds 3.621 ounces. 2370.630 grammes  
Specific gravity: 3.0062; hardness: 6.5. *Nephrite*  
Color: Spinach-green

A large circular panel, hollowed in the middle so as to leave a narrow raised border, boldly carved in undercut high relief with floral sprays springing from a floor of rocks. The design, nearly similar on the two sides of the panel, consists mainly of a tree-peony (*Paeonia moutan*) with branching stem, clad with the characteristically shaped leaves, bearing large double flowers and half-expanded buds, all exactly modelled after nature. Beneath it there are two or three flags sprouting from the rocks, with berries growing upon short stalks, in the midst of whorls of lanceolate leaves—a kind of iris cultivated in Chinese gardens for the sake of its bright purple fruit. The rocks are piled in artificial fashion and dotted with a few patches of moss near their base. The execution of the flowers is most vigorous and the grouping successful. The carving on the back of the panel is in less high relief but quite as carefully finished. This is one of the many beautiful jade objects that came into foreign hands after the looting of the Imperial Summer Palace near Peking in 1860.

The material is translucent and compact, with large black metallic markings that are evidently chromic iron.





- 470 K'ANG-HSI (1662-1722) FIGURE (*Hsiang*) CHINA

Dimensions:  $3.75 \times 4.0 \times .5$  inches.  $9.5 \times 10.2 \times 1.3$  centimetres. Weight: 4.673 ounces. 132.482 grammes  
Specific gravity: 2.9618; hardness: 6.5. *Nephrite*  
Color: White with greenish tint

A figure of a philosopher, in flowing robes of antique cut, seated on the ground. To be mounted on woodwork as part of a picture.

- 471 K'ANG-HSI (1662-1722) MEDALLION (*P'ai-tzu*) CHINA

Dimensions:  $3.25 \times .75$  inches.  $8.3 \times 1.9$  centimetres. Weight: 3.302 ounces. 93.610 grammes  
Specific gravity: 2.9704; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A medallion with rounded corners, boldly carved in openwork, with a horned and bearded dragon represented full-faced with its serpentine body enveloped in branches of the tree-peony (*Paeonia moutan*) with large expanded flowers.

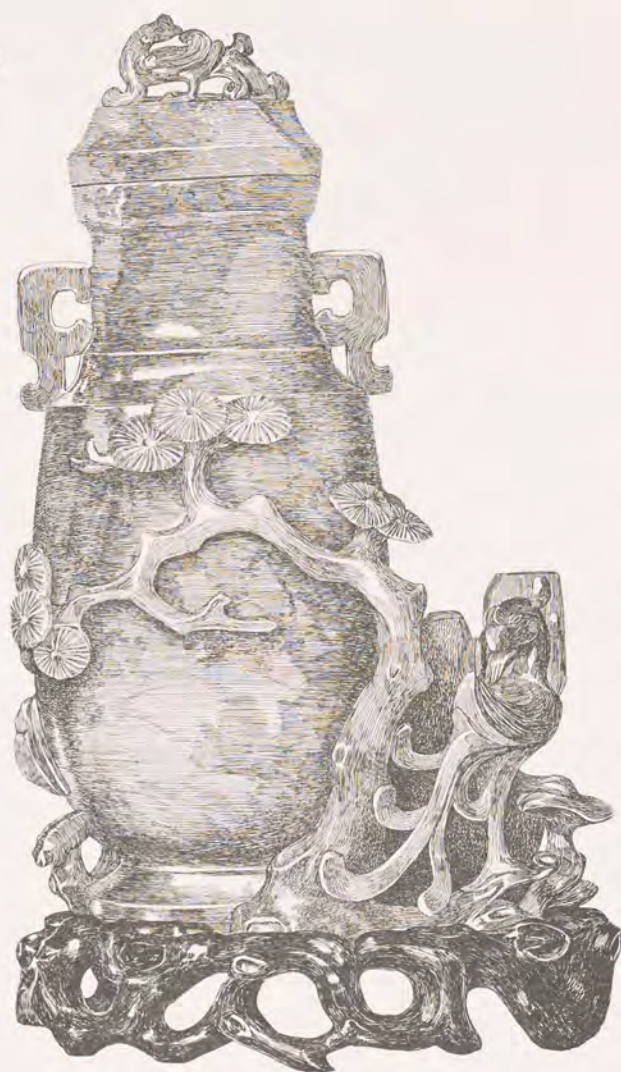
- 472 K'ANG-HSI (1662-1722) OVAL PLAQUE (*P'ai-tzu*) CHINA

Dimensions:  $3.12 \times 4.0 \times .25$  inches.  $7.8 \times 10.2 \times .7$  centimetres. Weight: 4.303 ounces. 122.002 grammes  
Specific gravity: 2.9699; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

An oval plaque carved in relief with a branching vine of melon, with the fruit, leaves, and tendrils all artistically rendered in natural style.

- 473 YUNG-CH'ENG (1723-1735) OVAL VASE WITH COVER (*Kai P'ing*) CHINA

Dimensions:  $5.91 \times 3.75 \times 1.78$  inches.  $15.0 \times 9.5 \times 4.5$  centimetres.  
Weight: 1 pound 2.775 ounces. 532.296 grammes  
Specific gravity: 3.3376; hardness: 7.0. *Jadeite*  
Color: Light grayish-green with a few small patches of emerald-green and cloudings in parts of beautiful shades of light and dark olive-green



An oval vase with scroll-handles, of perfect form and finished workmanship, with a spreading foot surrounded and supported by rocks and trees carved in openwork. The rocks rise up behind upon the right, with the sacred fungus growing at their base. A phoenix stands erect in front, with crested recurved head and spreading tail, resting one of its feet upon a fungus. In the foreground is a pine carved in bold relief so as to spread its branches, covered with leafy whorls, over the surface of the vase. On the left side is a bamboo stem with a few leaves upon it and another *ling-chih* fungus. The vase is hollowed out above the foot, which is encircled with a plain band at the rim and recedes again at the shoulder, which is separated from the neck by a sharply defined ridge. The neck is encircled above by a band-like rim and has two handles carved in open scroll designs projecting at the sides. The cover has a flat top, upon which reclines another phoenix, conventionally fashioned in openwork to serve as a handle.

The material is homogeneous and compact, and is slightly opalescent in general character. On both the vase and the cover there are some beautiful horn-brown, almost amber-colored, markings, due apparently to weathering.

- 474 YUNG-CH'ENG (1723-1735) PENDANT (*P'ai-tzu*) CHINA

Dimensions:  $2.69 \times 2.22 \times .25$  inches.  $6.8 \times 5.6 \times .6$  centimetres. Weight: 2.040 ounces. 57.835 grammes  
Specific gravity: 2.9468; hardness: 6.5. *Nephrite*  
Color: White with faint greenish tint

A pendant in the form of a Chinese keyless padlock, used for fastening as an amulet round the neck of a child. In a slightly sunken panel on each side the decoration is carved in slight relief. This consists on one face of water-lilies and a flying stork with a spray of three peaches in his beak, and on the other a peach-branch with an attached peach (symbol of long life), a flying bat (symbol of happiness), and a

Chinese "cash" punningly used for *Ch'uan*, "complete" or "perfect"; the whole being read, rebus fashion, "Happiness and long life complete."

The material is translucent, homogeneous and compact, and of remarkable purity in part. Internal fractures, seen by reflected light, show that the piece was cut transversely across the bedded structure.



475 YUNG-CHÊNG (1723-1735)

GIRDLE-BUCKLE (*Tai Kou*)

CHINA

Dimensions:  $5.53 \times 1.06 \times .69$  inches.  $14.1 \times 2.7 \times 1.8$  centimetres. Weight: 3.239 ounces. 91.852 grammes  
 Specific gravity: 2.9527; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint



A girdle-buckle of unusual design, gracefully carved in the form of a winged dragon with a prominent row of dorsal spines, the tail of which curves up to terminate in a grotesque bird's head. The oval stud projecting at the back is carved in the form of a chrysanthemum flower.

The material is translucent, homogeneous and compact. Near the head of the dragon there are grayish subtranslucent inclusions, evidently of nephrite itself. When a strong light is allowed to pass through the piece, the ridge on the back shows a sinewy structure and slight opalescence.

476 YUNG-CHÊNG (1723-1735)

WATER-JAR (*Ling-chih Kuan*)

CHINA

Dimensions:  $3.19 \times 6.84 \times 1.94$  inches.  
 $8.1 \times 17.4 \times 4.9$  centimetres.  
 Weight: 1 pound 1.781 ounces.  
 504.098 grammes  
 Specific gravity: 2.9572; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A small globular flattened jar (*kuan*) of perfect form and finished outline, with two loop-handles springing from tigers' heads, on which hang small movable rings. It is supported at the base by a branching stem of *ling-chih*, the sacred fungus of longevity, which bears three heads, and, with the help of a large artemisia leaf, nearly surrounds the vase—all strongly carved in very bold relief with openwork. The furrowed stem of the fungus at the back shows a russet mottling, and there are slight stains of the same color on the surface of the jar—an indication of the oxidized exterior of the original remarkably compact block. The polish is almost glass-like in its depth and transparency.

However viewed, whether as regards the texture and translucent character of the material, the form, design, finish, or general beauty of the object, this is an exquisite piece.



477 CH'EN-LUNG (1736-1795) (?)

GIRDLE-BUCKLE (*Tai Kou*)

CHINA

Dimensions:  $2.25 \times 1.53 \times .19$  inches.  $5.7 \times 3.9 \times .5$  centimetres. Weight: .938 ounce. 26.5815 grammes  
 Specific gravity: 3.2879; hardness: 7.0. *Jadeite*  
 Color: Lettuce-green mottled with white with a faint grayish tint

A small oblong girdle-buckle of beautifully mottled lettuce-green material. It has three central cross-bars, which with the ends form four spaces through which the girdle can be passed in fastening it.  
 The crystalline structure of the material can readily be made out with a pocket lens.

478 CH'EN-LUNG (1736-1795) (?)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions:  $2.53 \times 1.69 \times 1.16$  inches.  $6.4 \times 4.3 \times 2.9$  centimetres. Weight: 2.760 ounces. 78.2502 grammes  
 Specific gravity: 3.3351; hardness: 7.0. *Jadeite*  
 Color: Pale bluish-green tinged in parts with lavender and gray

A small snuff-bottle, undecorated but highly polished, of flattened oval form with a short straight neck. The material is coarsely crystalline, translucent, homogeneous and compact. The chief beauties of the piece lie in the simplicity of its form, its fine polish, and delicate tintings.



479 CH'EN-LUNG (1736-1795) (?) SNUFF-BOTTLE (*Pi-yen Hu*) CHINA

Dimensions:  $1.97 \times 1.97 \times 1.34$  inches.  $5.0 \times 5.0 \times 3.4$  centimetres. Weight: 3.534 ounces. 100.1815 grammes  
Specific gravity: 3.3345; hardness: 7.0. *Jadeite*  
Color: Light translucent greenish-yellow mottled with emerald-green

A plain snuff-bottle, undecorated but highly polished, in the form of a pilgrim-bottle or tiny flattened jar. The neck is short and curves upward to a narrow solid mouth pierced for the snuff-scoop.  
The coarse crystalline structure of the material may be readily detected by the naked eye.

480 CH'EN-LUNG (1736-1795) (?) INK-REST (*Mo Chuang*) CHINA

Dimensions:  $6.06 \times 1.59 \times .47$  inches.  $15.4 \times 4.0 \times 1.2$  centimetres. Weight: 3.796 ounces. 107.605 grammes  
Specific gravity: 2.9661; hardness: 6.5. *Nephrite*  
Color: Various shades of gray with large included patches of black

A long low flat stand with four low square feet, used by the Chinese scholar or writer to lay his cake of ink on. The piece is roughly finished and gives evidence of having been shaped by sawing only, the saw-marks being still visible in several places. The material is

called *mo-yü* or "ink-jade" from its color, and is rare in the present day. The color is due to the presence of a black mineral substance, which is apparently black oxide of manganese, particles of which can be seen held in suspension in the white and gray parts.

481 CH'EN-LUNG (1736-1795) MEDALLION (*P'ai-tzū*) CHINA

Dimensions:  $2.03 \times .16$  inches.  $5.2 \times .4$  centimetres. Weight: 1.006 ounces. 28.531 grammes  
Specific gravity: 3.2811; hardness: 7.0. *Jadeite*  
Color: Light mottled violet splashed with brilliant emerald-green

A little medallion of rounded form with foliated indented outline delicately etched with floral designs and pierced with two small holes on the reverse side for suspension. The rim is indented with eight regular foliations which are filled in on the obverse side with scrolled lines. This forms a frame of ornament to the field, which is outlined by a double circular line, and etched inside with the picture of a flying swallow and a lotus plant, engraved in all its details, with leaf,

flowers, and seeding fruit, accompanied by waving reeds. The reverse face is etched with a leafy branch of pomegranate, bearing a fruit at the top split wide open so as to display the seeds inside.

The material is interesting as exhibiting a remarkable combination of the rare purplish or lavender color with the brilliant emerald tints so characteristic of *fei-ts'ui*.

482 CH'EN-LUNG (1736-1795) PIERCED MEDALLION (*Pi*) CHINA

Dimensions:  $2.09 \times .16$  inches.  $5.2 \times .4$  centimetres. Weight: 1.149 ounces. 32.580 grammes  
Specific gravity: 3.3283; hardness: 7.0. *Jadeite*  
Color: Light lavender with cloudings of emerald-green

A small round medallion pierced in the centre with a round hole, modelled in the shape of a jade *pi*, used as an insignia of rank in ancient feudal times. The field, defined by circular lines engraved round the outer and inner rims, is etched with the symbols of the "four liberal arts" of the Chinese, two represented on either side, encircled with waving fillets. These are "literature," with the symbol of a book of four volumes bound in a cover; "painting," with the

symbol of a scroll picture; "music," with the symbol of a guitar wrapped in its brocaded case; and "chess," with the symbol of a checkered gobang-board.

The material is translucent, homogeneous and compact, the jadeite structure of which is very apparent by transmitted light. Occasional crystals are almost transparent.



483  
484CHIEN-LUNG (1736-1795) TWO CUPS WITH COVERS (*Kai Ch'a Wan*)

CHINA

Dimensions: 3.31 × 4.69 inches. 8.4 × 11.9 centimetres. Weight: 483=10.836 ounces. 307.224 grammes  
484=11.255 ounces. 319.092 grammes

Specific gravity: 483=3.3339; hardness: 7.0. *Jadeite*  
484=3.3344; 7.0. *Jadeite*

Color: White with veins and cloudings of emerald-green



the cover. These are the eight emblems or attributes of the Taoist genii or immortals that are constantly met with in Chinese decorative art, in architecture and wood-carving, as well as in jade, bronze, and porcelain. The eight Taoist divinities, or *rishi*, are revered as the special patrons of the different arts and handicraft

guilds. Commencing on the cup, and proceeding from right to left, the emblems are:

- 1 *shan*, the fan, carried by Chung-li Ch'üan, with which he is said to revive the souls of the dead.
- 2 *chien*, the sword of supernatural power, wielded by Lü Tung-pin.
- 3 *pan*, the castanets, a pair of which is always put into the hands of Ts'ao Kuo-chiu.
- 4 *hu-lu*, the double-gourd, carried by Li T'ieh-Kuai, the source of all kinds of magical appearances in the clouds of smoke issuing from it, as seen here.
- 5 *hua-lan*, the basket of flowers, borne by Lan Ts'ai-ho.
- 6 *yu ku*, the bamboo tube and rods, the attributes of Chang Kuo.
- 7 *ti*, the flute, played upon by Han Hsiang-tzū.
- 8 *lien hua*, the lotus, carried in the hand of Ho Hsien-ku.

The material of both pieces is in the main white, with markings of an emerald *fei-ts'ui*. The crystalline structure is very beautiful and pronounced, and can readily be seen by means of a pocket lens.

485

CHIEN-LUNG (1736-1795) SMALL CIRCULAR DISH (*T'ieh-tzū*)

CHINA

Dimensions: .84 × 5.62 inches. 2.1 × 14.3 centimetres. Weight: 5.964 ounces. 169.070 grammes

Specific gravity: 3.3381; hardness: 7.0. *Jadeite*

Color: Translucent greenish-gray

A small saucer-shaped dish with a broad prominent circular rim round the base, decorated inside with symbols of happiness and long life. The border is surrounded by a ring of five bats, emblematic of the five happinesses, somewhat roughly carved so as to appear to stand out in slight relief with their wings stretching to the rim and their heads pointing toward the middle of the dish. This is carved with a round medallion, enclosing one of the circular forms of the longevity character, *shou*.

The material of this piece is translucent, homogeneous and compact, and is seen under the microscope to consist of an aggregation of jadeite crystals, all quite small, grading to microscopic, the longest being about eight millimetres. The lamination is due to the nearly parallel arrangement of some prisms and to the alternation of layers of coarser and finer grains. The rock is very fresh and pure, without other constituent minerals, and little or no sign of decomposition or alteration by dynamic forces. Some small aggregates of secondary inclusions are seen as cloudings in the centre of some of the crystals.

Walden's analysis, with Clarke's reduction of the same, is given below:

		Jadeite	R'' <sub>2</sub> R''(SiO <sub>3</sub> ) <sub>4</sub>	Un- accounted for	
Silica . . . . .	59.02	46.80	12.22		
Alumina . . . . .	24.88	19.89	4.99		
Ferrie oxide . . . .	1.23		.33	.90	
Ferrous oxide . . . .	.28		.02	.26	
Manganous oxide . .	.19		.19		
Magnesia . . . . .	1.10		1.10		
Lime . . . . .	1.15		1.15		
Soda . . . . .	11.21	11.21			
Potash . . . . .	1.34	1.34			
Water . . . . .	.07			.07	
	100.47	79.24	20.00	1.23	

Abstract	
Jadeite . . . . .	79.24
Pseudo-jadeite . . . . .	20.00
Unaccounted for . . . . .	1.23
	100.47



486 FIGURE OF LONGEVITY DIVINITY (*Shou Lao*)  
CH'EN-LUNG (1736-1795)

CHINA

Dimensions:  $2.88 \times 1.59 \times .88$  inches.  $7.3 \times 4.0 \times 2.2$  centimetres.  
Weight: 3.476 ounces. 98.548 grammes  
Specific gravity: 3.3348; hardness: 7.0. *Jadeite*  
Color: Light lavender with a golden-russet staining in part

A small statuette of Shou Lao, the Taoist god of long life, modelled in the usual form, as an aged man with smiling features, high wrinkled forehead, and a long beard, dressed in flowing robes. He holds a sacred peach in his left hand and a large ju-i or wish-fulfilling sceptre in his right, with its head engraved with the *yin-yang* symbol, and a brown spot, which projects at the back, outlined as a bat. A stork reclines behind, stretching up its head on one side, where it is carved in openwork.

The unmistakable jadeite structure of the piece can very readily be detected by the aid of a pocket lens.



487 SMALL DOUBLE-GOURD VASE (*Hu Lu Ping*)  
CH'EN-LUNG (1736-1795) (?)

CHINA

Dimensions:  $2.78 \times 1.91$  inches.  $7.1 \times 4.8$  centimetres. Weight: 7.769 ounces. 220.278 grammes  
Specific gravity: 3.3344; hardness: 7.0. *Jadeite*  
Color: Light lavender

A miniature vase of solid form modelled in the shape of a double-gourd. It has a long band-like rim encircling the foot, and a round mouth defined by a plain circular rim. The upper edges of the two parts of the double-gourd are carved with rings of foliated ornament which project in strong relief from the surface, decorating the upper part with a pendent band of single foliations, the lower part with duplicate foliations of more complicated outline. The foot has been pierced in the middle with a small hole so that it might be strung upon a cord as part of one of the chains which the Chinese often attach to their hanging lamps.

This is an exceedingly large piece of pure lavender-tinted material, the beauty of which is highly intensified when a strong light is allowed to pass through it. Its crystalline structure is very apparent by reflected light. The color is very rare in ancient or very old pieces. The small statuette of the Venus de Milo, a modern worked piece of this Collection, is of similar color and was made from a boulder said to have been brought from Tibet about the middle of the nineteenth century.



488 CH'EN-LUNG (1736-1795) BOWL (*Wan*)

CHINA

Dimensions:  $2.16 \times 6.44$  inches.  $5.5 \times 16.3$  centimetres. Weight: 11.415 ounces. 323.618 grammes  
Specific gravity: 3.3374; hardness: 7.0. *Jadeite*  
Color: Similar to that of lump camphor, showing a translucent ground thickly interspersed with clouds of opaque white

A shallow bowl with slightly expanding sides rising sharply from a nearly flat bottom somewhat excavated toward the middle. The exterior, of rounded outline, has three low, solid, curving feet, projecting in a ring below. The bowl is decorated outside round the rim with a band carved in slight relief with a conventional design consisting of a series of convoluted outlines of fungus-like "sceptre-heads," as the Chinese call this ornamental chain. It shows through, on the inside, as a graceful border of wavy lines. This artistic piece is another illustration of the "Indian School," and it is not easy to decide positively as to its Chinese or Indian source. If it be Indian

of the Mogul period, as some assert, it bears certainly the impress of Chinese art. It seems safer to place it, meanwhile, in the Chinese class.

The material, which is of remarkable purity, is a choice example of that exceedingly rare variety which from its color and general appearance is called "camphor jade." It really resembles very closely in its granular clouded aspect a crystalline lump of common camphor. It is so translucent in parts that print in contact with it can easily be read through it. With the aid of a pocket lens its characteristic jadeite structure can readily be discerned.



489 CH'EN-LUNG (1736-1795)

CUP WITH COVER (*Kai Wan*)

CHINA

Dimensions: 3.03 × 4.09 inches. 7.7 × 10.4 centimetres. Weight: 5.703 ounces. 161.682 grammes  
 Specific gravity: 3.3374; hardness: 7.0. *Jadeite*  
 Color: Translucent light gray mingled with very translucent shades of green and light lavender

A small cup of the usual Chinese shape, like a miniature bowl, with a circular rim round the foot and a similar but smaller rim projecting at the top of the dome-like cover to serve as a handle. The cup, as well as the cover, is etched outside with Taoist symbols and emblems of longevity. The sacred peach tree spreads its branches round three fourths of the circumference, laden with the "fruit of life." The other fourth is filled in with Taoist symbols tied with waving fillets, including four out of the eight in the complete set (*pa an hsien*)—two figured upon the cup, two upon the cover. The two etched on the cup are the basket of flowers of Lan Ts'ai-ho and the lotus fruit of Ho Hsien-ku; the two on the cover, the sword of Lü Tung-pin and the flute of Han Hsiang-tzū. The cup and the cover are both engraved within the rim with the circular form of the longevity character *shou*. Chinese cups are always made in pairs, and the companion one to this would be, of course, etched with the other four Taoist symbols, to complete the series, viz.: the fan of Chung-li Ch'üan, the castanets of Ts'ao Kuo-chiu, the double-gourd of Li T'ieh-Kuai, and the bamboo tube and rods of Chang Kuo.

The material of which this cup and cover are made is remarkable for its transparency. Print can easily be read through every part of the cover when in contact with it; and the beautiful play of light on

it, together with the delicacy of the decoration, render it a most charming object. In these respects it is a unique piece.



Lan Ts'ai-ho was a legendary being of ancient times, usually reputed to be a woman, who wandered about in tattered garments, with one shoe off and one shoe on, begging in the streets, waving a wand aloft, and chanting a doggerel verse denunciatory of fleeting life and its delusive pleasures. She is said to have worn a wadded undergarment in summer, and in winter to have chosen snow and ice as a sleeping-place.

Ho Hsien-ku, the virgin herb-gatherer, who spent her days in solitary wanderings among the hills, where she passed to and fro as though endowed with wings, returning to her home at night.

Lü Tung-pin, a Taoist devotee of the eighth century who, meeting the god of fire one day, was commissioned to convert his fellow-men to the true faith, but was preliminarily exposed to a series of ten temptations which he successfully overcame,

whereupon he was invested with a magic sword, with which he traversed the empire for four hundred years, slaying dragons and riding the earth of divers kinds of evil.

Han Hsiang-tzū, a pupil of Lü Tung-pin who, having been carried up to the supernatural peach tree of the genii, fell from its branches and in his fall became immortal.

490 CH'EN-LUNG (1736-1795)

PLATE (*T'ieh-tzū*)

CHINA

Dimensions: 1.0 × 5.88 inches. 2.5 × 14.9 centimetres. Weight: 8.520 ounces. 241.555 grammes  
 Specific gravity: 3.3373; hardness: 7.0. *Jadeite*  
 Color: "Melting snow enclosing bits of moss" (*Hua hsüeh tai ts'ao*)

A deep round plate of remarkably perfect, sharply resonant, very translucent, compact and homogeneous material of the kind known to the Chinese as *hua hsüeh tai ts'ao*, "melting snow and moss," with broad, slightly prominent circular rim round the base. Plainly polished, with no carved decorations. It is so translucent in parts that print in contact with it can be read through it.

Microscopic examination of thin sections shows that the rock is very fresh and pure, without other constituent minerals, and exhibits only a small amount of crushing. The crystals are all quite small, grading to microscopic, the longest being about eight tenths of a millimetre.

Clarke's reduction of Walden's analysis, here given, shows the mineral composition to be:

		Jadeite	R <sup>2</sup> R''(SiO <sub>3</sub> ) <sub>4</sub>	Un- accounted for	
Silica . . . . .	58.40	49.63	6.21	2.56	
Alumina . . . . .	27.05	21.09	2.64	3.32	
Magnesia . . . . .	.57		.57		
Lime . . . . .	.65		.65		
Soda . . . . .	11.37	11.37			
Potash . . . . .	2.20	2.20			
Water . . . . .	.18			.18	
	100.42	84.29	10.07	6.06	
					Abstract
					Jadeite . . . . . 84.29
					Pseudo-jadeite . . . . . 10.07
					Unaccounted for . . . . . 6.06
					100.42

491 CH'EN-LUNG (1736-1795)

SCEPTRE (*Ju-i*)

CHINA

Dimensions: 13.97 × 3.16 × 1.15 inches. 35.5 × 8.0 × 3.8 centimetres. Weight: 14.362 ounces. 407.166 grammes  
 Specific gravity: 3.3339; hardness: 7.0. *Jadeite*  
 Color: Delicate greenish-gray touched with spots of golden-russet

A ju-i sceptre modelled in the natural form of a branching stem of the woody fungus of longevity (*Polyporus lucidus*), the sacred fungus or *ling-chih* of Taoist lore, which gave the original motive of this

peculiar form of sceptre. Its surface is covered with other emblems of long life and happiness, cleverly executed in strong relief with openwork carving. The long convoluted flattened stem of the fun-



gus, with its knotted outline, forms the handle of the sceptre; and curved up at the extremity is its large broad head of characteristic outline. Two smaller branches spring from the side of the stem, one of which lifts up two little blades to the level of the

From the hilt, which is perforated to be strung with a silk cord and tassel, springs up a narcissus flower of charming naturalistic design, the "water-fairy" of Taoist legend, as indicated by its name, *shui hsien hua*. A bat, as the special emblem of happiness, is carved



large fungus head, the other projecting in the middle to spread its twin blades across the upper part of the handle. Just below this point the handle is carved with a leafy branch of the sacred peach, which winds round from behind and displays its fruit upon the front.

clinging to the rim of the head of the sceptre, and completes its symbolism as an appropriate gift on an auspicious occasion.

The material of this piece is translucent and homogeneous and remarkably free from flaws. It has only an occasional vein-fracture.

492

LARGE ROUND DISH OF CHRYSANTHEMUM PATTERN (*Ta Chü Hua P'an*)

CH'IENT-LUNG (1736-1795)

CHINA

Dimensions: 1.5 × 13.97 × 3.16 inches. 3.8 × 35.5 × 8.0 centimetres. Weight: 3 pounds 2.116 ounces. 1420.780 grammes

Specific gravity: 3.3363; hardness: 7.0. *Jadeite*

Color: "Melting snow enclosing bits of moss" (*Hua hsüeh tai ts'ao*)

A large round saucer-shaped dish of the conventional chrysanthemum design, carved out of jadeite of the typical "melting snow and moss" variety (*Hua hsüeh tai ts'ao*). The interior is carved with six concentric rings of florets or petals surrounding a central disc, which is etched with parallel lines crossed at right angles. The petals, which are concave with raised outlines, increase in size and number from within outward so as to extend nearly to the margin of the dish, which has a slightly recurved rim. The dish is carved outside with a double ring of flutings of similar design, representing the reverse convexities of the two outer rings of petals. These are bounded below by the solid band-like circular rim which projects all

round the base. This base is flat, with the exception of a plain round disc, corresponding in size to that engraved above, which stands out in slight relief in the middle.

The firm bold carving of this piece is remarkable, and its importance is enhanced by its dimensions, which are extraordinary for this kind of jadeite.

The material is translucent, homogeneous and compact, and has taken a high polish. When a strong light is allowed to pass through it, the color readily resolves itself into white with a broken mixture of small grayish spots, and large green inclusions which may well be likened to bits of moss.

493

CH'IENT-LUNG (1736-1795)

A SCREEN (*Ch'a P'ing*)

CHINA

Dimensions: 14.56 × 6.81 inches. 37.0 × 17.3 centimetres

Hardness: 7.0. *Jadeite*

Color: "Melting snow enclosing bits of moss" (*Hua hsüeh tai ts'ao*)

An oblong panel of a variety of the "melting snow and moss" jadeite, smoothly polished, and mounted so as to exhibit the translucent effect of the peculiar structure and coloring of the material. The general effect is that of snow melted into slush and partially refrozen

so as to become clouded and semi-opaque. The panel is encircled with a border of gilt bronze of floral design delicately chased and finished, and enclosed in a wooden frame inlaid with silver *niellé* in a complicated rectangular fret.

494  
495

CH'IENT-LUNG (1736-1795)

PAIR OF BOWLS (*Fan Wan*)

CHINA

Dimensions: 3.03 × 7.25 inches. 7.7 × 18.4 centimetres. Weight: 494=12.195 ounces. 345.752 grammes

Specific gravity: 494=3.3377; hardness: 7.0. *Jadeite*

495=3.3385; 7.0. *Jadeite*

Color: "Melting snow enclosing bits of moss" (*Hua hsüeh tai ts'ao*)



A pair of bowls with slightly expanded rims, poised upon solid prominent circular feet, of the color known as "moss in melting snow" (*Hua hsüeh tai ts'ao*), or "bits of moss caught and held in melting snow," as it was described by a Japanese expert well versed in art, as well as in the Chinese language. The description is remarkably apt.

The base is engraved with a mark of four archaic "seal" characters enclosed in a square border. These are *Ch'ien-lung yü chih*, "Made in the imperial manufactory of Ch'ien-lung." From this mark we know that the bowls were made in the palace at Peking. The official description of the palace describes the "jade manufactory" as situated in the southwest corner of the grounds of the palace, within the



precincts of the "forbidden" wall. In this department of art the Emperor Ch'ien-lung displayed a very deep interest.

The material of both pieces is translucent, homogeneous and compact, and of a remarkably beautiful texture that is well brought out when a strong light is allowed to pass through it. It consists of

a mottling that has the appearance of melting snow. Here and there dispersed through it are pale-green markings resembling moss. The bowls are also interesting from their thinness. Print can easily be read through them at a distance of three to four millimetres.

496 CH'EN-LUNG (1736-1795)

BOWL (*Wan*)

CHINA

Dimensions: 2.0 × 5.56 inches. 5.1 × 14.1 centimetres. Weight: 1 pound 1.953 ounces. 508.970 grammes  
Specific gravity: 3.3394; hardness: 7.0. *Jadeite*  
Color: Pale sea-green thickly interspersed with crystalline granulations of opaque frosted aspect

A bowl of depressed solid form and unusual thickness, with a slightly expanding mouth and outwardly bevelled rim, and fashioned with a low broad band as its base. The bottom is decorated inside with a medallion composed of a lotus-plant and reeds carved in bold undercut relief. The rim is engraved with curved lines to represent water, and from it springs the lotus, bearing two spreading peltate leaves with recurved margins and two blossoms, the one on the left just expanded, the other fully blown so as to show the cup-shaped fruit with the seeds in the middle. This is surrounded by the long waving



flag of the reed starting from the same base. The form and the rough decorated surface of the interior of this bowl indicate that it was designed as a "brush-washing" vessel for the writer's table.

The material of this bowl exhibits in a most remarkable degree the granular crystallized appearance which is so characteristic of jadeite. A study of thin sections in the microscope shows that the rock has evidently been subjected to great straining forces. Large cross-sections with prismatic cleavage-cracks resolve themselves between crossed nicols into aggregates of jadeite with slightly different optical orientations. They break up into optical fields, and may be traversed by several lines indicating distinct ruptures. In some longitudinal sections this same mottling is very pronounced; in others it resembles more closely the curving mottling of bird's-eye maple so characteristic of all micas. There has also been developed a delicate lamination, which is plainly due to twinning in thin plates parallel to the orthopinacoid. The striations are sometimes straight, sometimes curved. There seems to be a second twinning inclined to the first which pro-

duces less distinct striations. This appears to be connected, to some extent, with the mottled effect. In places the rock has been crushed and dragged, producing streaks of fine grains and particles of pyroxene that have the same colors, index of refraction and of double refraction as the large crystals. Here the pyroxene has been crushed to powder that has been compacted and is indistinguishable from the larger crystals without the use of crossed nicols. The jadeite has been crushed by dynamic forces without having the crystallographic character altered. The rock exhibits a partial dynamic metamorphism without any signs of chemical or mineralogical metamorphism. In another thin section are seen fragments and fibres of jadeite that form veins through the rock and act as a cement between the larger unbroken crystals. The peculiar appearance of frosted moisture on a window-pane, or the clouded crystalline surface of a piece of galvanized iron, renders this piece unique.

Walden's analysis, with Clarke's reduction, yielded the following results:

		Jadeite	R <sup>2</sup> SiO <sub>4</sub>	Unaccounted for
Silica . . . . .	58.48	47.85	10.12	.51
Alumina . . . . .	23.57	20.34	3.23	
Ferric oxide . . . . .	1.68		1.68	
Magnesia . . . . .	1.33		.53	.80
Lime . . . . .	1.62		1.62	
Soda . . . . .	10.33	10.33		
Potash . . . . .	3.09	3.09		
Water . . . . .	.16			.16
	100.26	81.61	17.18	1.47

Abstract	
Jadeite . . . . .	81.61
Pseudo-jadeite . . . . .	17.18
Unaccounted for . . . . .	1.47
	100.26

K is regarded as replacing Na in jadeite. The other molecule is a jadeite-acmite with lime and magnesia in place of alkalis. Penfield includes it with the jadeite, as is proper.



497 CH'EN-LUNG (1736-1795)

VASE (*P'ing*)

CHINA

Dimensions: 5.03 × 2.62 × 1.5 inches. 12.8 × 6.7 × 3.8 centimetres.  
Weight: 14.112 ounces. 400.075 grammes  
Specific gravity: 3.3328; hardness: 7.0. *Jadeite*  
Color: Light grayish-green with blue

A thick solid vase of flattened bottle-shape, with low flat-bottomed feet and long neck flaring above toward the mouth, which is almost quadrangular in outline. From the sides of the neck project two solid handles of long oval form, the upper part roughly carved in dragons' heads, the lower part in imitation of rings. The style is

primitive, although it has not the appearance of any great antiquity. It seems to be rather due to the crude work of an unpractised hand.

In microstructure the material is somewhat



laminated and the crystals of jadeite are all quite small, grading to microscopic. There are scattered patches, with very irregular outline, of another mineral. The irregular outline is caused by the projection into this mineral of crystals of jadeite, as though into a cavity. In some cases the rare mineral is crowded with minute crystals of jade-

ite. In each patch the mineral constitutes one individual with one orientation; sometimes two occur together. It is colorless, with much lower refraction than the pyroxene, and with moderate refraction. Its mineralogical nature was not made out, but it is probably albite.

## 498 CH'EN-LUNG (1736-1795)

GIRDLE-CLASP (*Tai Kou*)

CHINA

Dimensions:  $2.88 \times 2.22 \times .84$  inches.  $7.3 \times 5.6 \times 2.1$  centimetres. Weight: 3.4186 ounces. 96.9165 grammes  
Specific gravity: 3.3404; hardness: 7.0. *Jadeite*  
Color: Light bluish-gray

A girdle-clasp in the form of a flying bat. The material is very translucent, homogeneous and compact, with a finely crystalline structure, and has taken a fine polish.

The bat, called *fu* in Chinese, is punningly used as a symbol of

happiness, which is also called *fu* but is written quite differently. The great number of homonyms in the Chinese language makes punning very easy.

499  
500  
501

## CH'EN-LUNG (1736-1795)

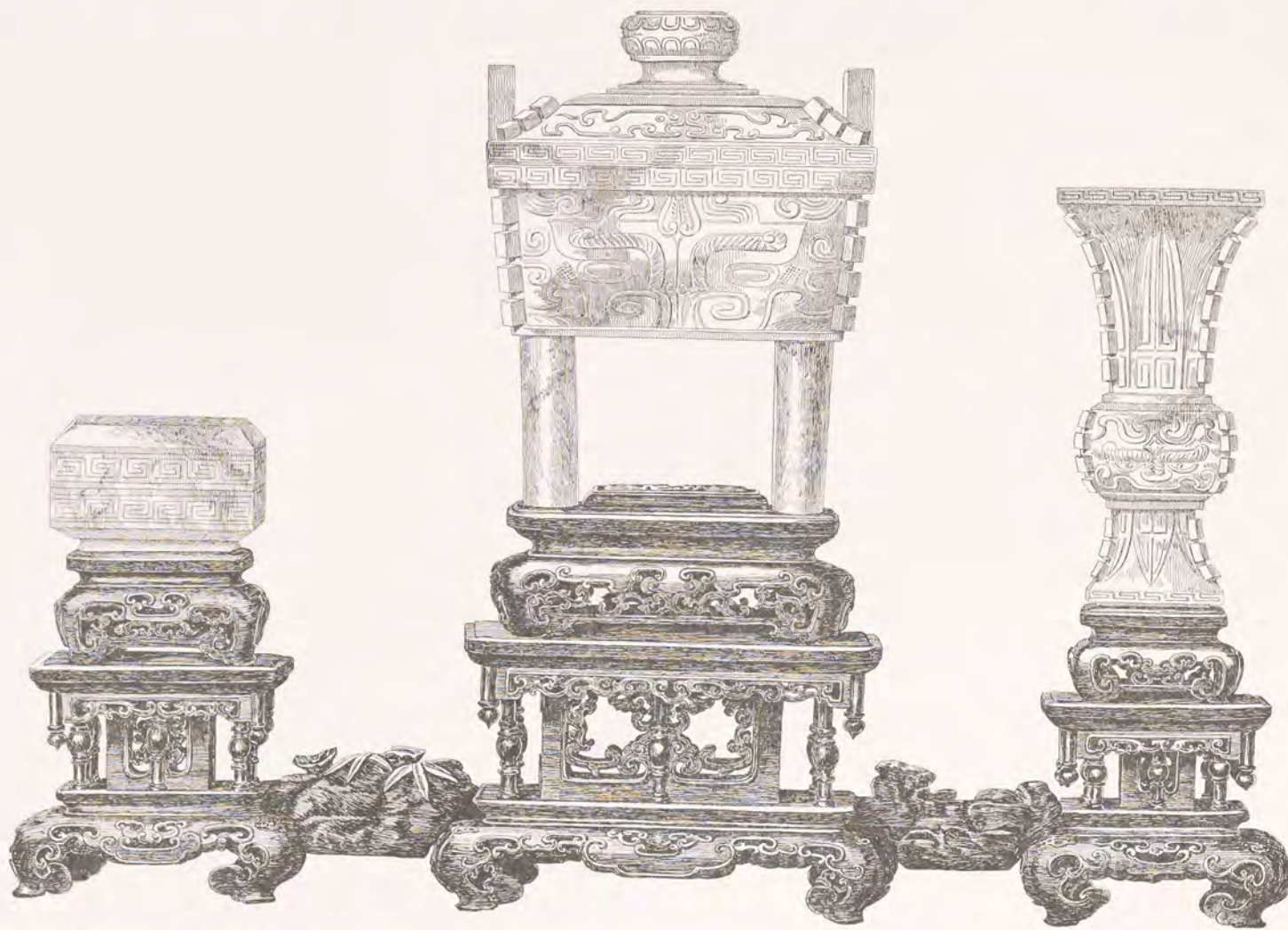
ALTAR SET (*San Shê*)

CHINA

Dimensions: 499= $4.91 \times 3.69 \times 1.84$  inches.  $12.5 \times 9.3 \times 4.7$  centimetres. Weight: 16.034 ounces. 454.606 grammes  
500= $1.31 \times 1.97 \times 1.59$  inches.  $3.3 \times 5.0 \times 4.0$  centimetres. 3.767 ounces. 106.820 grammes  
501= $4.12 \times 1.91 \times 1.19$  inches.  $10.5 \times 4.8 \times 3.0$  centimetres. 5.764 ounces. 163.424 grammes  
Specific gravity: 499=3.3232; hardness: 7.0. *Jadeite*  
500=3.3191; 7.0. *Jadeite*  
501=3.3216; 7.0. *Jadeite*  
Color: Emerald-green mingling with light gray and markings of dead-oak-leaf

An incense-burning set of three pieces designed for private use upon the altar before a small shrine; modelled after ancient bronze forms and engraved with archaic designs (*Ku wên*). It consists of a covered box (*ho*) for holding the sandal-wood chips of prepared incense, a four-footed urn (*lu*) for burning it, and a vase (*p'ing*) for the minia-

ture poker, tongs, and shovel, which are generally made of gilt bronze. The urn is modelled after a sacrificial vessel (*ting*) of the ancient King Wên Wang (1231-1135 B. C.). It is an oblong quadrangular vase, slightly expanding upward, with a flat base mounted upon four cylindrical legs. The angles are strengthened by projecting vertical dentated ridges, and the mouth is surrounded by a prominent band,



ture poker, tongs, and shovel, which are generally made of gilt bronze. The urn is modelled after a sacrificial vessel (*ting*) of the ancient King Wên Wang (1231-1135 B. C.). It is an oblong quadrangular vase, slightly expanding upward, with a flat base mounted upon four cylindrical legs. The angles are strengthened by projecting vertical dentated ridges, and the mouth is surrounded by a prominent band,

ing storm dragon, with the lineaments degraded so as to look like an ornamental pattern, filling the field with their expansion round the two eyes, which are at once recognized. The vaulted cover, strengthened at the angles by the same dentated ridges, is encircled below by a similar chain of continuous fret. The sides are carved in slight relief with bands, each composed of two conventional dragons with



bodies extended in ornamental scrolls. It is surmounted by a handle of rounded oblong form, which is decorated outside with two circles, of foliated outline, composed of rings of conventional lotus petals.

The box is of oblong shape with a prominent rim round the foot, plainly decorated with a broad band enclosing a chain of continuous rectangular fret engraved all round. The cover, of the same shape as the box, bevelled inside to fit upon a raised rim below, is encircled with a similar band of chain fret. The top encloses a countersunk oblong medallion carved in slight relief with the longevity character *shou* formally framed by the wings of two bats, symbols of happiness.

The vase is carved in the form of one of the ancient sacrificial wine-vessels called *ku*, and is of tall quadrangular shape, with a bulging body, an expanded foot, and a flaring neck. The angles are strengthened with the same projecting dentated ridges, and the four sides of the body are filled with similar monstrous lineaments even more degraded than on the urn. The neck and foot of the vase are decorated with conventional bands of palm-leaf design. The upper and lower rims are both encircled with similar chains of continuous rectangular fret engraved lightly outside.

An imperial set.

The particular form of incense-burner here described is figured in the ancient books on bronze under the name of Wên Wang Ting, being modelled after one of the ancient bronze sacrificial vessels which used to be made by Chow Kung for the ancestral temple of

his father Wên Wang, the virtual founder of the Chow dynasty which held sway in China from 1122 to 249 B. C. It differs from the rounded sacrificial vessel with three straight legs, usually called *ting*, in being square and in having four feet. Its original use was to hold sacrificial food, incense having been introduced at a much later date by the Buddhists.

Wên Wang ("literary prince") is the posthumous title or temple-name of Ch'ang, prince of Ch'i, usually known as the "Chief of the West," who was born in 1231 B. C. Succeeding to the principality in 1169 B. C., he showed himself a "pattern of princely virtues," and was resorted to by multitudes from other parts of the empire, who "eagerly enrolled themselves among his subjects." Denounced by one of the feudal barons to the debauched tyrant Chow Sin, then on the imperial throne of the Yin dynasty (1401-1122 B. C.), he was thrown into prison, where he remained for two years, occupying his leisure in work upon the "Yih-King" or "Book of Changes," said to be the most ancient of the Chinese classical books. He died in 1135 B. C., and was succeeded by his son Fa, posthumously known as Wu Wang ("the military prince"), who in 1123 B. C., at the head of a vast assembly of nobles and people of the empire, engaged the forces of Chow Sin, completely overthrew them, and ascended the throne the same year as the first sovereign of a new dynasty called "Chow." Chow Kung, or Duke of Chow, was a younger brother and the counsellor of Wu Wang, and is the reputed inventor of the "South-pointing Chariot," the precursor of the mariner's compass.

## 502 CH'EN-LUNG (1736-1795)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions: 2.44 × 1.16 × .88 inches. 6.2 × 3.0 × 2.2 centimetres. Weight: 2.218 ounces. 62.905 grammes  
Specific gravity: 3.3272; hardness: 7.0. *Jadeite*  
Color: Emerald-green and variegated grayish-green



A snuff-bottle of elaborate design, carved in the form of a tall quadrangular vase with the body bulging at the sides, encircled above and below by prominent ridges, poised upon a small projecting foot, and tapering above at the neck, which ends in a small round mouth surrounded by a square prominent rim. The stopper, to

which the little snuff-spoon is attached, is an oval Indian carbuncle. The back is decorated in slight relief with plant symbols of long life, including a *ling-chih* fungus pierced by two blades of grass, a tiny spray of bamboo leaves, and another of pine. The front is carved in irregular relief with the head of a fish protruding from waves, and a pair of bats, joint emblems of plenty (*yü*) and of happiness (*fu*).

## 503 CH'EN-LUNG (1736-1795)

SMALL COMB (*Chieh-tzū*)

CHINA

Dimensions: 1.31 × 2.62 × .28 inches. 3.3 × 6.7 × .7 centimetres. Weight: .762 ounce. 21.615 grammes  
Specific gravity: 3.3234; hardness: 7.0. *Jadeite*  
Color: Emerald-green with patches of light lavender

A little comb of semicircular form with teeth on one side only. The back is carved like a jointed bamboo stem (*chieh*), tapering from the middle to the two ends and curved so that the teeth of the comb are longest in the centre. The form of the comb indicates the material from which combs are usually made in China, shown also in the com-

position of the written character for "comb," which is made up of the radical *muh*, "wood," and a phonetic called *chieh*, meaning "a notch or joint of the bamboo."



## 504 CH'EN-LUNG (1736-1795)

SNUFF-BOTTLE (*Yen Hu*)

CHINA

Dimensions: 2.09 × 1.66 × 1.22 inches. 5.3 × 4.2 × 3.1 centimetres. Weight: 1.986 ounces. 56.314 grammes  
Specific gravity: 3.3334; hardness: 7.0. *Jadeite*  
Color: Grayish-green clouded with emerald-green, and a spot of black on the neck

A snuff-bottle of the usual typical form with a slightly compressed oval body, which has an excavated oval-shaped base, and an upright, solid, cylindrical neck pierced with a small round orifice for the insertion of the spoon. The snuff-bottle is smoothly polished, its only decoration being the beautifully colored surface.



505 CH'EN-LUNG (1736-1795) SNUFF-BOTTLE (*Yen Hu*) CHINA

Dimensions:  $2.81 \times 1.91 \times 1.38$  inches.  $7.1 \times 4.8 \times 3.5$  centimetres. Weight: 3.951 ounces. 112.016 grammes  
Specific gravity: 3.3352; hardness: 7.0. *Jadeite*  
Color: Emerald-green and translucent gray

A snuff-bottle of compressed oval form and smoothly polished surface in the shape of the natural pebble. This beautiful little *fei-ts'ui* bottle is a good example of the fondness of the Chinese for imitating nature in their works of art and adapting their art to natural condi-

tions. A rough pebble of suitable shape and color, highly polished, and skilfully excavated to the most delicate thinness, was often prized above the most elaborately carved specimen. This is an example of such natural unadorned beauty.

506

CH'EN-LUNG (1736-1795) PENDANT (*P'ai-tzū*) CHINA

Dimensions:  $2.0 \times 1.16 \times .62$  inches.  $5.1 \times 3.9 \times 1.6$  centimetres. Weight: 1.322 ounces. 37.479 grammes  
Specific gravity: 3.3223; hardness: 7.0. *Jadeite*  
Color: Emerald-green changing to lighter shades of green



A delightful little pendant of oval flattened shape, carved in openwork with design composed of a grotesque goldfish swimming in the midst of lotus and other water-plants. The fish, with goggle-eyes, flowing fins, and long spreading tail, is the dragon-fish which the Chinese have bred by process of selection from the carp. It is sur-

rounded by a clump of lotus with flowers and emerald-tinted leaves united by long waving leaves of reed, upon one of which the fish is feeding.

This is really a gem in the perfect finish and polish of its naturalistic design. The material is translucent, homogeneous and compact, with some patches of almost transparent *fei-ts'ui* or emerald-green.

507 CH'EN-LUNG (1736-1795) GIRDLE-CLASP (*Tai Kou*) CHINA

Dimensions:  $3.5 \times .75 \times .59$  inches.  $8.9 \times 1.9 \times 1.5$  centimetres. Weight: 1.200 ounces. 34.036 grammes  
Specific gravity: 3.3216; hardness: 7.0. *Jadeite*  
Color: Emerald-green with a paler green

A miniature girdle-clasp carved in the form of a branch of the woody fungus, *Polyporus lucidus*, the symbol of longevity. The general outline is that of a ju-i sceptre, the head, formed of a fungus, being recurved to make the hook of the clasp, while another fungus projects as a stud at the back. The front is overlaid with an interlacement of the same plant carved in openwork at one point, where a bat stretches across with wings expanded, figuring as an emblem of happi-

ness. It is an appropriate present for a child, bringing with it good wishes of happiness and long life expressed in its design.

The translucent, homogeneous and compact material of the piece consists of a mixture of white, varying from very pale green into occasional emerald-green or *fei-ts'ui* color. Its unmistakable jadeite structure is very apparent.



508 CH'EN-LUNG (1736-1795) THUMB-RING (*Pan Chih*) CHINA

Dimensions:  $1.06 \times 1.25$  inches.  $2.7 \times 3.2$  centimetres. Weight: 1.654 ounces. 46.910 grammes  
Specific gravity: 3.3364; hardness: 7.0. *Jadeite*  
Color: Light emerald-green mottled and clouded with lighter shades of green

A cylindrical archer's ring of the form worn on the thumb in China under the reigning Manchu dynasty. With thick solid side, it is bevelled inward at the base to fit the hand, while the convex top slopes downward from the middle.

509 CH'EN-LUNG (1736-1795) THUMB-RING (*Pan Chih*) CHINA

Dimensions:  $1.19 \times 1.34$  inches.  $3.0 \times 3.4$  centimetres. Weight: 2.156 ounces. 61.130 grammes  
Specific gravity: 3.3287; hardness: 7.0. *Jadeite*  
Color: Light emerald-green mingled with small cloudings of faint grayish-green

A cylindrical archer's ring of the form worn on the thumb in China under the reigning Manchu dynasty. With thick solid side, it is bevelled inward at the base to fit the hand, while the convex top slopes downward from the middle. The material is translucent, homogeneous and compact, of a pleasing emerald-green, with occasional darker veinings and markings.



510 PLUME-HOLDER (*Mao Kuan*)

CH'EN-LUNG (1736-1795)

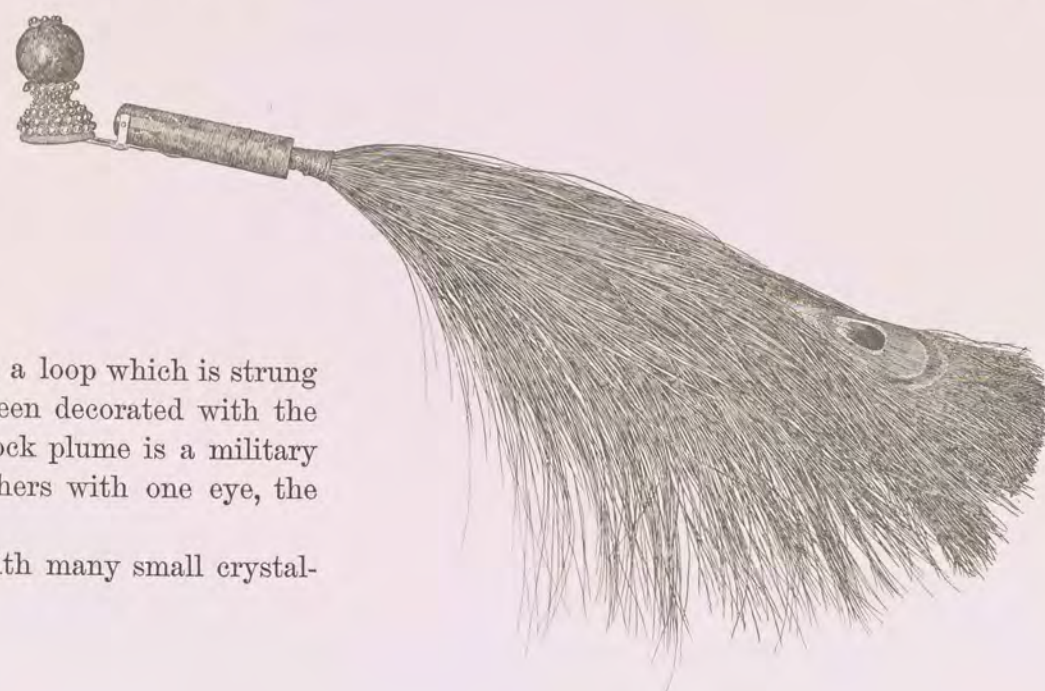
CHINA

Dimensions: 2.62 × .62 inches. 6.7 × 1.6 centimetres.

Weight: 1.267 ounces. 35.932 grammes

Specific gravity: 3.3273; hardness: 7.0. *Jadeite*

Color: Emerald-green mottled with lighter tints



A cylindrical tube closed at one end, where it is carved with a loop which is strung with cord to attach it to the hat of a mandarin who has been decorated with the "peacock plume," which is inserted in the tube. The peacock plume is a military decoration, and is of two grades: the lower marked by feathers with one eye, the higher by a plume with two-eyed feathers.

The material is translucent, homogeneous and compact, with many small crystal-vents and fractures.

511 CH'EN-LUNG (1736-1795) PAIR OF SAUCER DISHES (*Tieh-tzu*)

CHINA

Dimensions: 1.06 × 6.09 inches. 2.7 × 15.5 centimetres.

Weight: 511=12.309 ounces. 348.980 grammes

512=12.162 ounces. 344.815 grammes

Specific gravity: 511=3.3335; hardness: 7.0. *Jadeite*512=3.3339; 7.0. *Jadeite*

Color: Gray with mottlings of green interspersed with clouds of lavender and touches of golden-russet. Through one runs a vein of emerald-green

A pair of round saucer-shaped dishes with broad solid rims projecting at the base, decorated inside with floral sprays. The bottom of each dish is filled with a branch of the woody peony (*Paeonia moutan*), with a full-blown blossom, buds, and leaves formally carved in slight relief and finished with a few lines of etching.

When examined mineralogically with a strong light upon it, the crystalline structure of the jadeite is very apparent, and the crystalline markings are specially well shown on the bottoms of the saucers.

513 CH'EN-LUNG (1736-1795) PAPER-WEIGHT (*Shu Chên*)

CHINA

Dimensions: 2.47 × 1.62 × .84 inches. 6.3 × 4.1 × 2.1 centimetres.

Weight: 2.652 ounces. 75.166 grammes

Specific gravity: 3.3316; hardness: 7.0. *Jadeite*

Color: Light sea-green with light lavender

An ornament or paper-weight of translucent, homogeneous and compact material, in the form of two Chinese lions playing with a ball with ribbons which are of light lilac color.

514 CH'EN-LUNG (1736-1795) PAPER-WEIGHT (*Shu Chên*)

CHINA

Dimensions: 1.06 × 2.84 × 1.91 inches. 2.7 × 7.2 × 4.8 centimetres.

Weight: 6.465 ounces. 183.285 grammes

Specific gravity: 3.3353; hardness: 7.0. *Jadeite*

Color: Bluish-green with patches of delicate lavender

A paper-weight fashioned in the form of a melon, carved out of a beautifully translucent, homogeneous and compact piece, the crystals of which can be clearly seen with a pocket lens.

The four-lobed fruit, of natural ovoid shape, is engraved with a broad-caded pattern to represent its reticulated rind. The branching stem

is carved in openwork at the base of the melon, and gives off twigs covered with leaves, tendrils, and flowers, which spread over the surface, executed in charming naturalistic relief. To one of the twigs a moth is clinging with expanded wings and curled antennæ.



515 CHI'EN-LUNG (1736-1795) SAUCER-SHAPED DISH (*P'an tzu*) CHINA

Dimensions: 1.16 × 5.28 inches. 3.0 × 13.4 centimetres. Weight: 6.879 ounces. 195.021 grammes  
Specific gravity: 3.3389; hardness: 7.0. *Jadeite*  
Color: Emerald-green mottled with lighter and darker shades of green

A small plainly polished saucer-shaped dish, resting upon a broad prominent circular band-like foot, with no carved decoration to interfere with the effect of the varied coloring of the material.

When a strong light is allowed to pass through it the green becomes clearly defined into lenticular spots crossing each other as a whiter magma. A few similar spots of the very rich emerald-green called *fei-ts'ui* add beauty to the dish. It is coarsely crystalline and sharply resonant.

516 CHI'EN-LUNG (1736-1795) ARTIST'S BRUSH-HOLDER (*Pi Tung*) CHINA

Dimensions: 7.12 × 7.62 inches. 18.0 × 19.4 centimetres. Weight: 8 pounds 15.956 ounces. 4081.080 grammes  
Specific gravity: 3.2889; hardness: 7.0. *Jadeite*  
Color: Pea-green and grayish-green interspersed with occasional touches of emerald-green, dead pear-leaf, and black

A large brush-holder of the usual cylindrical shape, with thick rounded rim and a flat base mounted upon a ring of five broad scrolled feet curving outward below. The surface is decorated all round with an elaborate design of the usual character, with the details deeply carved and undercut, representing a mountain landscape with temples and aged hermits in Taoist dress. It represents the Taoist paradise, the abode of their principal divinity Shou Lao, and the eight aged men are the eight immortals of Taoist legend coming to worship at the shrine (*Pa Hsien Ching Shou*), the two additional figures of youthful aspect, with their hair tied up in side tufts, being attendant sprites. Beginning from the back, a mountain mass clad with pines and dryandra trees and enveloped in rolling clouds, we come on the left to a mountain torrent running down from a pillared pavilion, with the valley below fringed with willows and poplars. Unrolling the scene further we come to a path cut in the steep hillside with four figures upon it, coming and going, including three of the immortals and an attendant who is accompanying one of them, carrying his long staff. Next another group are seen wending their way along; one of the figures is leaning upon a staff, another is carrying a bundle tied at the end of a long crook. Finally we reach the sacred abode of the god, who is seen standing in the foreground in the shade of a large pine, with a long staff in his hand, expounding his philosophy to the last of the eight immortals. These are the two aged men unrolling a scroll before the divinity. The boy on the right carries on his shoulder a branch of the sacred fungus, and close beside him there is a tripod vessel filled with a pile of the life-giving peaches, the other special attribute of the divinity. This stands immediately in front of the temple, with palms growing in the courtyard, which is overshadowed with the *shou shan*, "the rock of ages," from which we started.

The material is subtranslucent, homogeneous and compact, with the veining running horizontally through the piece.

The gilded bronze stand of pierced engraved work, which accompanies this cylinder, dates from the Ch'ien-lung period.



517 CHI'EN-LUNG (1736 1795) ARTIST'S DISH OR BOWL (*Pi Hsi*) CHINA

Dimensions: 8.56 × 6.22 × 2.62 inches. 21.7 × 15.8 × 6.7 centimetres. Weight: 2 pounds 8.873 ounces. 1158.752 grammes  
Specific gravity: 3.3349; hardness: 7.0. *Jadeite*  
Color: Pea-green interspersed with clouds of paler tint flecked with snow and mottled and veined in parts with brilliant emerald-green

A deep circular dish with four rounded mammillary feet and four loop-handles hung with movable rings, all carved out of the same piece. The two larger handles, spreading out horizontally from the rim on either side of the bowl, are modelled and elaborately carved in the form of a pair of bats—emblematic of happiness—supported by scrolled loops springing from the sides of the bowl, from which two movable rings hang suspended. The smaller handles, in front and behind, are carved in conventional scrolls, and studded on the sides of the bowl to form relief ornaments and end below in loops hung with tiny rings.

The bottom of the bowl, inside, is carved with a medallion in open relief, the centre of which is the circular form of the *shou* (longevity) character encircled by four *swastika* symbols enclosed within an ornamental frame. The reading is *Ssu wan shou*,—"Four times ten thousand ages,"—a formula reserved in China for the emperor alone, indicating that the piece must have originally come from one of the palaces at Peking. Its former possessor, Mr. Walkinshaw, is reported to have purchased it in China soon after the sack of the Summer Palace at Yuan Ming Yuan in 1860.



518 CHIEN-LUNG (1736-1795) ROUND SCREEN (*Yuan Ch'a Ping*)

CHINA

Dimensions: 6.81 × .59 inches.  
17.3 × 1.5 centimetres.  
Weight: 1 pound 13.872 ounces.  
846.865 grammes  
Specific gravity: 3.3313; hardness: 7.0.  
*Jadeite*  
Color: Emerald-green interspersed with  
patches of light lavender and gray

A circular disc, carved as a picture to be mounted in a stand for the table. The obverse face, polished to a slight convexity, is deeply and beautifully carved with a mountain landscape representing the Taoist paradise, or, as the Chinese express it, *Shou Shan Lou T'ai Tien Ko*—"The Hills of the Immortals, with Towers, Terraces, Temples, and Pavilions." The scene is filled with precipitous mountain peaks, in the midst of which stand temples and pillared pavilions, built upon raised stone terraces, surrounded by stone balustrades. Tall trees of the sacred pine and dryandra grow up on either side. Down the middle of the picture winds a rivulet, starting from the left, emerging from the hills on the right, to pass under a stone bridge and be lost in curling waves below. A large vase stands in the middle of the river, with clouds of incense rising from the interior and spreading out to envelop the scene, as it were, with a sacred atmosphere. The foreground is occupied by two aged figures in the guise of Taoist hermits. They are standing upon the stone bridge which spans the river as if pausing to admire the beauty of the surrounding scenery. The reverse face, which is flat, is carved in intaglio so as to leave a raised circular rim springing below from a rocky platform, upon which grows the gnarled trunk of a plum tree. This trunk gives off twigs in various directions, bearing a few blossoms and swelling buds artistically arranged. The plum, which flowers in winter before the leaves expand, is considered in China to be the special emblem of a flourishing old age.

The material is translucent, homogeneous and compact, with large markings of a pale emerald-green *fei-ts'ui* mixed with light gray and lavender. In a few spots the green is so intense as almost to appear black. By reflected light and with a pocket lens the crystalline structure can be clearly discerned.

519 CHIEN-LUNG (1736-1795) ARTIST'S WATER-DISH (*Hsi-tzu*)

CHINA

Dimensions: 2.22 × 5.75 × 4.44 inches. 5.6 × 14.6 × 11.3 centimetres. Weight: 1 pound 4.545 ounces. 582.452 grammes  
Specific gravity: 3.3350; hardness: 7.0. *Jadeite*  
Color: Emerald-green slightly variegated by lighter shades running into tones of gray



An artist's water-receptacle, known from its decoration as a "Five happiness, wish-fulfilling dish" (*Wu fu ju-i hsi*). It is modelled in a conventional symbolical form in the outline of the fungus-like head of a *ju-i* sceptre, and stands on five feet carved in the shape of bats, from which it derives the name given above, meaning "Bowl (*Hsi*) of five happinesses (*wu fu*) and fulfilled wishes (*ju-i*)," in the punning way which delights a Chinese mind. The five bats are carved in vigorous relief underneath, with heads pointed outward and wings folded. The bowl, of lobulated form, has the border encircled by a prominent rim, indented and convoluted in the conventional outline already indicated. It is intended for the writing-table, to hold water to wash the pencil-brushes which the Chinese use in writing, and stands firmly enough on its five feet.

The material is very coarsely crystalline, consisting of a white jadeite in which there are broken masses or patches which, when a strong light is allowed to pass through the piece, resolve into a pale emerald-green, though not so pronounced in daylight.



520 CHIEN-LUNG (1736-1795) MINIATURE DISH (*Hsiao Tieh-tzu*) CHINA

Dimensions: .78 × 3.19 inches. 2.0 × 8.1 centimetres. Weight: 1.714 ounces. 48.604 grammes  
Specific gravity: 3.3129; hardness: 7.0. *Jadeite*  
Color: Lettuce-green mottled with emerald-green and patches of a warm brownish-gray

A little round dish, of natural design, carved in the form of a lotus leaf with the edges turned up and partially recurved at the margin. It makes a miniature saucer-shaped dish with an irregularly convoluted rim of a charmingly natural outline. Little dishes of this kind are used for nuts and sweetmeats on the dinner-table, including often lotus seeds, for which this would be a fitting receptacle.

The leaf, carved with branching veins above and below, is decorated underneath in slight relief with smaller leaves and lotus blossoms attached to a spray which springs from the same stalk. This stalk curls round from the middle of the base in a spiral curve. Some of the leaves are folded over the rim of the dish, with their natural outlines increased in effect by the bright green coloring of the mineral.

521 CHIEN-LUNG (1736-1795) SNUFF-BOTTLE (*Pi-yen Hu*) CHINA

Dimensions: 2.09 × 1.5 × 1.0 inches. 5.3 × 3.8 × 2.5 centimetres. Weight: 1.326 ounces. 37.589 grammes  
Specific gravity: 3.3225; hardness: 7.0. *Jadeite*  
Color: A mixture of emerald-green, very dark green, and different tones of gray

A slender well-formed snuff-bottle of beautifully mottled Burmese jadeite of the variety known among the Chinese as *fei-ts'ui* or "king-fisher plumes," referring to the emerald-green, which is the preponderating color. It is undecorated, but finely polished.

522 CHIEN-LUNG (1736-1795) MINIATURE DOUBLE-GOURD (*Hsiao Hu-lu*) CHINA

Dimensions: .84 × .34 × .19 inch. 2.1 × .9 × .5 centimetres. Weight: .672 ounce. 1.905 grammes  
Specific gravity: 3.3430; hardness: 7.0. *Jadeite*  
Color: Emerald-green

A tiny pendant carved in the shape of a double-gourd, with a smaller gourd, leaf, and tendrils attached, pierced in openwork at the base for suspension as an amulet or ornament.

The material is translucent, homogeneous and compact, with a very delicate veining but no chromic iron.



523 CHIEN-LUNG (1736-1795) SCEPTRE (*Ju-i*) CHINA

Dimensions: 10.56 × 3.78 × 2.34 inches. 26.8 × 9.6 × 5.9 centimetres.  
Weight: 1 pound 9.414 ounces. 720.500 grammes  
Specific gravity: 3.2657; hardness: 7.0. *Jadeite*  
Color: Pea-green with a slight mixture of emerald-green and much flecked with black

A magic ju-i sceptre carved in the shape of a branch of the peculiar variegated woody fungus (*Polyporus lucidus*) called by the Chinese *ling-chih*. The handle is formed of the curved stem of the fungus, convoluted and knotted in natural fashion, and it bears upon its upper surface a quantity of smaller fungi in all stages of growth, springing up in clumps or singly, with their heads supported upon short curling branchlets. These are executed in bold relief with openwork. The topmost head reaches up so as to be joined to the large fungus, which spreads out laterally above to form the characteristic "head" of the ju-i. This is modelled like the rest, with a short vertical ridge between two spirals within the usual lobular outline. The lower rim of the blade is encircled above with a row of heads carved in relief. The end of the handle of the sceptre is perforated to be strung with a silk cord.

The material of this piece, when studied in thin sections, is found to consist of microscopic prisms and shorter crystals of pyroxene in an irregular aggregation, together with larger crystals of compact amphibole. The two minerals appear to be nearly contemporaneous crystallizations, the pyroxene being somewhat earlier. The amphibole is not fibrous and does not seem to have resulted from the alteration of pyroxene. It is, however, quite the same in appearance as the compact amphibole, which is secondary. Its exact origin in this case is doubtful.





## 524 CH'EN-LUNG (1736-1795)

RUSTIC VASE (*P'ing*)

CHINA

Dimensions:  $5.62 \times 6.12 \times 2.88$  inches.  $14.3 \times 15.4 \times 7.4$  centimetres. Weight: 2 pounds 13.002 ounces. 1275.800 grammes  
 Specific gravity: 3.3300; hardness: 7.0. *Jadeite*  
 Color: Translucent aquamarine clouded and flecked with snow

An ovoid vase with a border of rectangular fret and openwork handles carved in the form of archaic dragons, with surroundings carved in bold openwork detail. A rustic pine-trunk hollowed out to form a second vase at the side spreads its branches over the vase; a branch of bamboo displays its leaves on the front, and clouds out-

lined in the shape of branching *ling-chih* fungus encircle the vase. On the clouds is perched a phenix (*feng-huang*) with a longevity fungus in its beak; a stork is represented behind the tree-trunk; and two bats are carved in relief as emblems of happiness.

## 525 CH'EN-LUNG (1736-1795)

PENDANT (*P'ai-tzu*)

CHINA

Dimensions:  $2.19 \times 1.38 \times .25$  inches.  $5.5 \times 3.5 \times .7$  centimetres. Weight: 1.015 ounces. 28.791 grammes  
 Specific gravity: 3.3316; hardness: 7.0. *Jadeite*  
 Color: Light emerald-green

A pendant shaped as an oval plaque perforated in the middle, with two antique dragons (*ch'ih-lung*) carved upon it in slight relief surrounded by light scrolls of clouds. One, larger in size, is represented crawling through the central hole, the smaller one being attached to the lower rim of the pendant.

## 526 CH'EN-LUNG (1736-1795)

GIRDLE-BUCKLE (*Kou-tzu*)

CHINA

Dimensions:  $4.0 \times 1.31 \times .88$  inches.  $10.2 \times 3.4 \times 2.3$  centimetres. Weight: 4.2000 ounces. 119.0638 grammes  
 Specific gravity: 3.3050; hardness: 7.0. *Jadeite*  
 Color: Emerald-green with paler mottlings, a stratum of lighter color underneath

A buckle composed of two parts—one furnished with an oval clasp to fit a projection on the other, which is carved as a monster's head. Both have buttons behind for attachment to the girdle or belt. Each portion is studded in front with medallions carved in openwork with antique dragons (*ch'ih-lung*) coiled in the midst of scrolled clouds.

## 527 CH'EN-LUNG (1736-1795)

JADE BOOK (*Yü Shu*)

CHINA

Dimensions:  $5.56 \times 3.75 \times 1.56$  inches.  $14.1 \times 9.5 \times 4.0$  centimetres  
 Hardness: 6.5. *Nephrite*  
 Color: White with a greenish tint

A book consisting of four oblong tablets of jade framed in sandalwood and mounted in the form of a Chinese book between two boards of sandalwood, carved in low relief with an ornamental pattern of scrolled design, representing the outlines of two archaic dragons. The title is engraved in a vertical panel in the middle of the first board. The jade tablets are framed in yellow brocade, with alternate leaves of paper on which a facsimile of the text is written in manuscript in gold on a black ground. The book is enclosed in a wrapper of swastika-pattern brocade, fastened by pegs of stained ivory, with the manuscript title pasted on the outside.

The first tablet is painted in gold outline with the picture of a hexagonal seven-storied pagoda with bells hanging from the eaves. The title of the book is displayed again on the pagoda, one character on each story. The forms of two imperial five-clawed dragons reach down from the clouds on either side as if guarding the pagoda.

The text, a translation of which follows, is a copy of an inscription composed by the emperor and engraved upon a stone slab or stele (*pei*) erected beside the "Seven Buddha Pagoda" built by him of

stone at Peking. The marble stele would be mounted as usual upon the back of a tortoise and placed in the courtyard in front of the pagoda.

The text covers the six succeeding faces of the jade tablets and is signed at the end by the mandarin Liang Kuo-chih, who wrote it for the emperor. The last face contains the outlines of another pair of five-clawed imperial dragons, enveloped in scrolled clouds, guarding the jewel of the law, which is represented as a flaming disc in the middle.

The translation follows:

YÜ CHIH CH'Ï FO T'AI PEI CHÏ.

"Tablet Record of the Seven Buddha Pagoda  
 Composed by the Emperor."

"The stanzas referring to the Seven Buddhas, which recount the deeds of the early ancestors of the Buddhist faith, are to be found in a scattered form in the Sanscrit books although they cannot be quoted from any one canon. Among the presents recently brought from Tibet by the Pan-ch'an Erdeni Lama<sup>1</sup> there was offered to

<sup>1</sup> The Pan-ch'an Lama is the Grand Lama of Ta'shi-lunpho, who is the second in rank in the Tibetan hierarchy. The third in the line of Tashi Lamas, who came with great ceremony to Peking in 1780 and unhappily died there of smallpox on November 12, must be the one referred to in the text. His body was taken back to Tibet and the

magnificent temple of Huang Ssu, with its marble bas-reliefs of the life of Buddha, was built at Peking as his memorial by the Emperor Ch'ien-lung (1736-1795). This emperor was doubtless the author of the jade book, although his name is not actually given. The text is in the handwriting of one of his courtiers named Liang Kuo-chih.



Us a Tibetan roll-picture of the Seven Buddhas, on which the names of the fathers, mothers, and family retinue of all the Buddhas were given in order. When we enquired of the Buddhist monks not one of them knew their history, until after a consultation with Chang-chia Kuo Shih<sup>1</sup>, referring to the Tibetan Canon and to the Chinese Canon, found in the sacred books called the 'Long Agamas,' the 'Kalpa of the Sages,' the 'Tables of the Incarnations,' and the 'Extended Explanation of the Origin of Buddha,' one or two passages bearing upon the origin of these Buddhas.

"The first, Vipasyi Buddha, a Kchâttriya by birth, surnamed Ku-li-jo, whose father was Pandu and mother Pandupati, was a native of the city of Pandupati. His chief disciples were two—one named K'ien-t'u, the other named Tissa; his attendant was named Asôka; his son was named Fang Ying.

"The second, S'ikhin Buddha, a Kchâttriya by birth, surnamed Ku-li-jo, whose father was Ming-siang and mother Kuang-yao, was a native of the city of Kuang-siang (Trabadvaja?). His chief disciples were two—one named A-p'i-fou, the other named P'o-p'o; his attendant was named Ming hang; his son was named Wu-liang.

"The third, Vis'vabhû Buddha, a Kchâttriya by birth, surnamed Ku-li-jo, whose father was Chan-têng and mother Mi-chieh, was a native of the city of Wu-yü. His chief disciples were two—one named Fu-yü, the other named Yu-to-ma; his attendant was named Chi-mieh; his son was named Miao-chüeh.

"The above three Buddhas are the Buddhas of the past kalpa called the 'æon of ornaments.'

"The fourth, Krakuchehandra Buddha, a Brahman by birth, surnamed Kâs'yapa, whose father was Li-tê and mother Shan-chih, was a native of the city of An-ho (Kchematavi?). His chief disciples were two—one named Sa-ni, the other named Pi-lu; his attendant was named Shan-chüeh; his son was named Shang-mêng.

"The fifth, Kanakamuni Buddha, a Brahman by birth, surnamed Kâs'yapa, whose father was Ta-tê and mother Shan-shêng, was a native of the city of Ch'ing-tsêng (S'ubkavastu?). His chief disciples were two—one named Shu-p'an-na, the other named Yu-to-lou; his attendant was named An-ho; his son was named Tao-shih.

"The sixth, Kâs'yapa Buddha, a Brahman by birth, surnamed Kâs'yapa, whose father was Fan-tê (Brahmadatta) and mother Ts'ai-chu (Dharmavartî), was a native of the city of Po-fo-nai (Benares). His chief disciples were two—one named Tissa, the other named Bharadvaja; his attendant was named Shan-yu; his son was named Chin-chün.

"The seventh, S'âkyamuni<sup>2</sup> Buddha, a Kchâttriya by birth, surnamed Gâutama, whose father was S'uddhâdana Râja and mother Mahâmâyâ, was a native of the city of S'râvastî. His chief disciples

were two—one named S'ariputta, the other named Mâudgalyâyana; his attendant was named Ananda; his son was named Râhula.

"The above four Buddhas are the Buddhas of the present praise-worthy kalpa.

"With regard to Buddha, the one Buddha is identical with the multitude of Buddhas, numerous as the sands of the Ganges; and the Ganges-sand multitude of Buddhas is identical with the one Buddha. The fathers, mothers, and personal retinue are also all alike and what need is there of distinguishing? So is truth; and as each grain of dust is absorbed in the wide ocean, the myriad sects of disciples should not reject a single dogma of the faith. For this reason, understanding the due sequence of cause and effect, we have had unsullied stone chiselled into shape, and built this Seven Buddha Pagoda for sacrificial worship.

"The following eulogy has been written on the subject:

"The past ornament-bearing kalpa is the same  
As the present praiseworthy kalpa.  
The star constellations of the future  
Will roll by in the snap of a finger.  
Speaking of Buddhas, trinity is but unity;  
The three past Buddhas are not really three,  
And how can the four present Buddhas be four?  
Yet they are distinguished to be grouped as seven.  
They are all really identical with the one Buddha,  
Although all the seven have dedicatory stanzas.  
In the broad elucidation of a particular doctrine  
A single hair may occasionally be added.  
A temple may be provided for the Jewel Râja  
And the full-moon face of Buddha be displayed.  
So a pagoda has been built for the group of seven,  
Which, as the sacred books of the law declare,  
Are neither identical nor yet different.  
The words of Buddha are not embroidered words;  
When first taught they are easily comprehended.  
The doctrine is accepted by the innate intellect,  
Only it is impossible to go to hear.  
We bow down to the miracle-working clouds,  
An everlasting refuge for the inhabited world,  
To beg for the safety of all living beings.  
May one by one follow on to bear witness!"

"Respectfully written by the  
Emperor's servant Liang Kuo-chih."  
Whose seals *Ch'en* and *Chih* are affixed.

## 528 CH'IENT-LUNG (1736-1795)

OBLONG PLAQUE (*P'ai-tzû*)

CHINA

Dimensions: 2.0 × 2.25 × .25 inches. 5.1 × 5.8 × .7 centimetres. Weight: 1.292 ounces. 36.647 grammes  
Specific gravity: 2.9681; hardness: 6.5. *Nephrite*  
Color: White with a grayish tint

A small oblong plaque carved in openwork with the picture of a Taoist hermit offering a peach, plucked from a tree behind, to a devotee kneeling at a table.

## 529 CH'IENT-LUNG (1736-1795)

FLOWER RECEPTACLE (*Hua Ch'a*)

CHINA

Dimensions: 4.0 × 7.5 × 1.5 inches. 10.2 × 19.0 × 3.8 centimetres. Weight: 1 pound 1.048 ounces. 483.300 grammes  
Specific gravity: 2.9300; hardness: 6.5. *Nephrite*  
Color: White with tints of very light green and some spots of dead pear-leaf

A receptacle for two flowers naturally carved in openwork in the shape of a lily blossom and of a pomegranate, hollowed out in the interior to hold water. The appropriate leaves are attached, with a

smaller pomegranate on the stalk behind, and a bat is crouched upon the lily leaves, below which is a spray of begonia. A life-like praying-mantis (*Mantis religiosa*) in the foreground completes the design.

## 530 CH'IENT-LUNG (1736-1795)

OBLONG PLAQUE (*P'ai-tzû*)

CHINA

Dimensions: 3.0 × 3.5 × .5 inches. 7.6 × 9.5 × .7 centimetres. Weight: 3.299 ounces. 93.4262 grammes  
Specific gravity: 2.9615; hardness: 6.5. *Nephrite*  
Color: White with light greenish-tint

An oblong plaque, the mounting of a ju-i sceptre, with rounded edges, carved in openwork with a pair of mandarin ducks, one standing in the water, the other flying toward it through the air. A reticulated background of lotus and sagittaria flowers is realistically represented.

<sup>1</sup> Chang-chia is the title of the Metropolitan Lama of Peking; Kuo Shih, State Preceptor, is his Chinese rank. A portrait of one of these dignitaries, the Chang-chia Hutuktu Lalitavajra, from a miniature on silk of the eighteenth century, is given in Professor Grünwedel's *Buddhist Art in India*, p. 56.

<sup>2</sup> The historical Buddha.



531



TAOIST MOUNTAIN SCENE (*Shou Shan*)  
CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 9.06 × 6.09 × 2.0 inches. 23.0 × 15.5 × 5.1 centimetres.  
Weight: 3 pounds 5.485 ounces. 1516.275 grammes  
Specific gravity: 2.9574; hardness: 6.5. *Nephrite*  
Color: Light pearl-gray with light clouds of gray

A rocky mountain scene of Taoistic character carved in bold relief in a slab of white nephrite slightly tinged in parts, especially near the base, with gray. The central figure in front, standing upon the rocky floor of a niche in the mountain-side overshadowed by a pine tree, is dressed in Taoist costume and holds a lotus leaf in his right hand. He represents one of the Taoist divinities. The boy with his hair gathered into two side tufts, standing on the rock to the left, is an attendant sprite. Waves are dashing on the floor beneath, with several storks, the aerial messengers of the Taoist gods, perched on each side of the water, and others flying in the air above. The scene is continued over the back of the slab, which is carved in similarly bold relief with pines and storks.

The material is translucent, homogeneous and compact, with a few veins slightly darker in color, and inclusions near the base of a slightly more opaque and slightly gray substance.

Thin sections in the microscope show in places fairly parallel fibres, with traces of the original pyroxenic grains in their arrangement. Prismatic crystals of amphibole are fairly abundant and lie in several directions.

532 CH'EN-LUNG (1736-1795)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions: 1.78 × 1.31 × 1.16 inches. 4.5 × 3.3 × 2.9 centimetres. Weight: 2.497 ounces. 70.7838 grammes  
Specific gravity: 2.9620; hardness: 6.5. *Nephrite*  
Color: White with an exceedingly faint bluish tint

A small snuff-bottle in the form of a melon with part of the vine, leaves, and tendrils superimposed upon it in relief, and an incised beetle shown on one side.

The material is translucent, with an almost pure white reflection at

the lower part of the bottle, and very faint brownish stains in some places, due to weathering before the piece was cut. It is very homogeneous and compact and is quite free from other blemishes.

533 CH'EN-LUNG (1736-1795)

PAPER-WEIGHT (*Shu Chên*)

CHINA

Dimensions: 2.91 × 2.44 × .34 inches. 7.4 × 6.2 × .9 centimetres. Weight: 2.841 ounces. 80.562 grammes  
Specific gravity: 2.9492; hardness: 6.5. *Nephrite*  
Color: White with faint grayish tint

An ornament of rounded oblong outline fashioned in the form of a dragon with a long serpentine body coiled round toward the centre. The bearded monster has two curved horns and a few interrupted dorsal spines, but only two legs can be distinguished, each armed with three claws. The magic jewel is hidden within a scroll of cloud in front of the dragon's mouth. The body is clothed in piebald fashion with patches of scales delicately engraved, the intervals being carved in relief with the flaming attributes of a supernatural animal.

The dragon in Chinese art always takes the place of the cobra of

Indian Buddhist lore, as Dr. Williams quaintly puts it from a missionary point of view: "The old serpent, the dragon, has enclosed all China in its wicked folds." This artistic little carving is curious as showing a kind of transitional phase between the two. The Emperor Ch'ien-lung was a devotee of ancient Buddhism, and on an imperial vase of his reign one sometimes sees the nine dragons replaced by nine serpents with the realistically expanded hoods of the cobra.

The material is absolutely pure, the color uniform, and the polish unexcelled.

534 CH'EN-LUNG (1736-1795)

VASE (*Tsun*)

CHINA

Dimensions: 3.81 × 4.06 inches. 9.7 × 10.3 centimetres.  
Weight: 13.879 ounces. 393.485 grammes  
Specific gravity: 2.9405; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A low broad beaker-shaped vase, with bowl-like body and flaring neck, alternately fluted and ribbed vertically so as to simulate a flower of four petals. The neck is decorated inside and out with formal foliations connected by scrolls, the body in four panels with curved conventional scrolls springing from the heads of a pair of phoenixes. It resembles in form and decoration one of the ancient bronze sacrificial wine-jars known as *tsun*.

The material is without a flaw, and the workmanship, as might be expected in a Ch'ien-lung piece, is perfect in every detail. It is a little beauty that grows on one and repays close study. When a strong light is allowed to pass through the vase, a faint transverse veining is discernible, the sinewy structure is apparent, and a very faint opalescence is seen on the thinner edges.





535



CHIEN-LUNG (1736-1795)

VASE (*P'ing*)

CHINA

Dimensions:  $6.66 \times 2.69 \times 1.59$  inches.  $16.9 \times 6.8 \times 4.0$  centimetres.  
 Weight: 13.309 ounces. 377.319 grammes  
 Specific gravity: 2.9482; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A vase of flattened form, of simple graceful outline, with oval body and broad neck slightly expanding above, standing upon a broad low pedestal carved in the same piece of flawless jade. The pedestal has six low feet beneath, and it is surrounded above by an interrupted crenellated border, a kind of palisade, from the interior of which springs a vine of the

double-gourd plant. This winds gracefully up and around the vase, the branches bearing a profusion of double-gourds, which, intermingled with flowers, leaves, and tendrils, are carved in complete relief with openwork all round the surface.

In many ways this is a beautiful piece: the material is flawless, the color uniform, the polish perfect, and the relief decoration both graceful and bold. Transmitted light brings out very finely the faint greenish tint.

536

CHIEN-LUNG (1736-1795)

PAPER-WEIGHT (*Shu Chên*)

CHINA

Dimensions:  $1.34 \times 1.97 \times 1.34$  inches.  $3.4 \times 5.0 \times 3.4$  centimetres. Weight: 2.983 ounces. 84.589 grammes  
 Specific gravity: 2.9576; hardness: 6.5. *Nephrite*  
 Color: White with faint bluish tint

A little paper-weight modelled in the form of a goat with long horns curving inward at the tip and lying down with legs folded beneath the broad body.  
 The piece is remarkable for the purity of the material, the beauty of the texture, and the evenness and purity of its color.

537

538

539

CHIEN-LUNG (1736-1795)

ALTAR SET (*San Shê*)

CHINA

Dimensions: 537= $3.38 \times 4.72$  inches.  $8.6 \times 12.0$  centimetres. Weight: 1 pound 2.060 ounces. 511.990 grammes  
 538= $1.5 \times 2.56$  inches.  $3.8 \times 6.5$  centimetres. 3.698 ounces. 104.856 grammes  
 539= $4.47 \times 1.41$  inches.  $11.3 \times 3.6$  centimetres. 6.583 ounces. 186.653 grammes  
 Specific gravity: 537=2.9579; hardness: 6.5. *Nephrite*  
 538=2.9564; 6.5. *Nephrite*  
 539=2.9548; 6.5. *Nephrite*  
 Color: White with very faint greenish tint

An altar set of three pieces, consisting of an incense-burner (No. 537) of elegant form and design, modelled in the shape of an ancient bronze tripod (*ting*), with three large mammillated feet, a depressed body bulging so as to form a horizontal ridge and vertically fluted, a circular mouth rising toward the rim, and furnished with two upright graceful loop-handles; the cover, of tall vaulted outline, is also vertically fluted and surmounted by a round button carved to a point at the top; a round box with cover (No. 538), both vertically fluted round the sides, and the cover is engraved at the top with the round form of the character *shou* (longevity); a vase (No. 539) of slender oval form, with low foot surrounded by a plain band, the body carved in relief with vertical fluting, and neck having two long tubular quill-like handles.

An altar set of this kind is usually placed upon a side-table in the scholar's study before the image of any Buddhist or Taoist divinity whose worship he may affect, or perhaps merely to perfume the atmosphere. The round covered box contains the fragrant chips of sandalwood or prepared incense which is burned in the urn, and

the vase is a receptacle for the miniature apparatus of tongs, poker, and shovel, made of gilded bronze or some other metal and used to keep the little fire burning. This particular fluted design is commonly known as the "chrysanthemum pattern."



The three pieces were evidently cut from the same block of translucently homogeneous and compact material.

540

CHIEN-LUNG (1736-1795)

SMALL BRUSH-HOLDER (*Pi T'ung*)

CHINA

Dimensions:  $3.78 \times 2.22$  inches.  $9.6 \times 5.6$  centimetres. Weight: 9.295 ounces. 263.519 grammes  
 Specific gravity: 2.9545; hardness: 6.5. *Nephrite*  
 Color: White with faint greenish tint

A miniature brush-holder of cylindrical form, on three small scroll feet, delicately carved in relief with the suggestion of a sylvan retreat for the scholar. Two large pines overshadow the entrance of a grotto in the mountain-side, within which there is seen a table with a pile of Chinese volumes upon it. A few plants are growing on the rocks below, and a single cloud floats along overhead.

The material is translucent, compact and homogeneous. At the lower end there is present a large vein of a white opaque substance, probably of the same mineral as the rest of the piece.



541 CH'EN-LUNG (1736-1795)

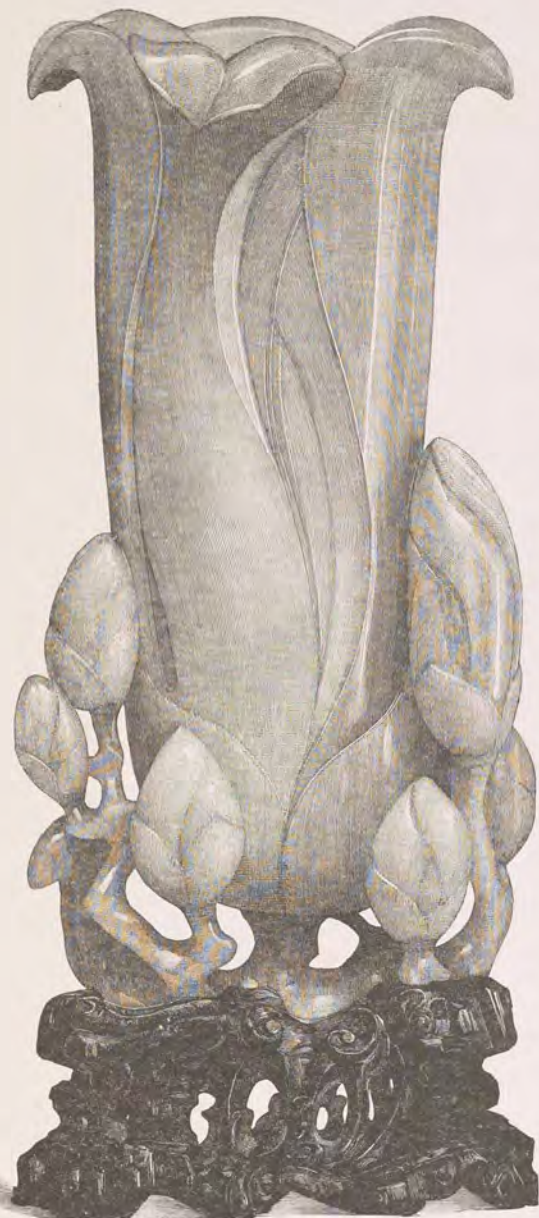
MAGNOLIA VASE (*Yu-lan P'ing*)

CHINA

Dimensions: 6.25 × 2.97 × 1.91 inches. 15.9 × 7.5 × 4.8 centimetres.  
 Weight: 14.179 ounces. 401.982 grammes  
 Specific gravity: 2.9457; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A vase modelled in the shape of a magnolia flower, the stem forming the foot and having clusters of buds of different size sprouting from it on either side and behind, which are all carved in very high relief with openwork, surrounding the large flower. This is the flower of the *Magnolia yulan*, which is cultivated in the country around Peking, where it is a conspicuous sight in a temple courtyard in early spring, when the tree is thickly covered with its magnificent white jade-like blossoms, before the leaves have begun to expand. So in this floral spray, in the midst of all the flower buds, there is only one tiny immature leaf just beginning to expand. The design could hardly have been more realistic. The polish is very perfect.

The material is translucent, compact and homogeneous, with a few inclusions of a white, more opaque substance, probably nephrite. When a strong light is allowed to pass through it, the sinewy structure is well shown, especially on the thin stems and edges, as well as a faint opalescence.



542

PHENIX (*Feng-huang*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 4.5 × 3.25 × .12 inches. 11.4 × 8.3 × .3 centimetres.  
 Weight: 1.419 ounces. 40.2283 grammes  
 Specific gravity: 2.9426; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A small plaque, for inlaying, delicately carved in openwork in the form of a phoenix carrying a small leafy twig in its beak.

543 CH'EN-LUNG (1736-1795)

PAPER-WEIGHT (*Shu Chên*)

CHINA

Dimensions: 1.16 × 2.38 × 1.88 inches. 3.0 × 6.0 × 4.7 centimetres. Weight: 3.333 ounces. 94.509 grammes  
 Specific gravity: 2.9524; hardness: 6.5. *Nephrite*  
 Color: White with very faint greenish tint

A little paper-weight cunningly fashioned in the form of lotus fruit, a smaller capsule still surrounded by petals, a lotus leaf, and a reed being tied together to its stalk and bound round by another reed so as to make a small bundle. Along the rim of the fruit a longicorn beetle is crawling, so true to nature that its species is recognizable at a glance. The openwork carving of one of the flower-stalks affords a

loop for suspension, and this object might also be worn as an appendage to the girdle, like a Japanese *netsuké*, of which its form reminds one.

The material is translucent, homogeneous and compact, with a few inclusions of a white, more opaque substance, evidently another form of nephrite.

544 CH'EN-LUNG (1736-1795)

CUP WITH COVER (*Kai Wan*)

CHINA

Dimensions: 2.56 × 3.75 inches. 6.5 × 9.5 centimetres. Weight: 4.155 ounces. 117.822 grammes  
 Specific gravity: 2.9526; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A little cup of egg-shell thinness, with slightly spreading rim, with a cover of the usual saucer shape. The cup is carved outside in relief with a diaper of diamond-shaped patterns, increasing in size from below upward, in accordance with the shape of the cup. The foot projects in the form of a flower with the eight petals hollowed out so as to leave a cup-shaped depression in the centre. The cover is decorated in diapers of similar style but of different patterns, and is encircled above by a spiral line enclosing tiny leaves. The polish of both cup and cover, outside and in, is of the highest. The style of decoration seems to be purely Indian, but the form is Chinese.

The material of both the cup and the cover is translucent, in parts almost transparent, the cover being so thin that print placed in contact with it can be read through it. The structure, though homogeneous, appears by transmitted light to be made up of a delicate mottling, almost suggesting a former crystalline structure. Both pieces are remarkably sonorous and beautiful in tone.





545 CH'EN-LUNG (1736-1795) SNUFF-BOTTLE (*Pi-yen Hu*) CHINA

Dimensions:  $2.69 \times 1.97 \times 1.66$  inches.  $6.8 \times 5.0 \times 4.2$  centimetres. Weight: 5.358 ounces. 151.805 grammes  
 Specific gravity: 2.9617; hardness: 6.5. *Nephrite*  
 Color: White of very faint gray tone

A snuff-bottle with short plain neck and a body carved all over with a basket-work pattern in relief, and finely polished. The material is translucent, homogeneous and compact, and of remarkably even texture, white markings and reflections on one side of the bottle suggesting a part of the bedding, where a delicate touch of pale brown is visible.

546 CH'EN-LUNG (1736-1795) PAPER-WEIGHT (*Chên Chih*) CHINA

Dimensions:  $2.09 \times 4.47 \times 3.16$  inches.  
 $5.3 \times 11.3 \times 8.0$  centimetres.  
 Weight: 9.532 ounces. 270.235 grammes  
 Specific gravity: 2.9532; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A paper-weight modelled in the form of a vine of the bitter gourd. This plant, called *k'u kua*, or "bitter gourd," by the Chinese, but more generally known as *lai kua* on account of its warty fruit, is the *Momordica Charantia* of botanists, the fruit of which, peeled and dried, makes vegetable-sponge. The insect crouching upon one of the leaves is the praying-mantis (*Mantis religiosa*), the *tao lang* of China.

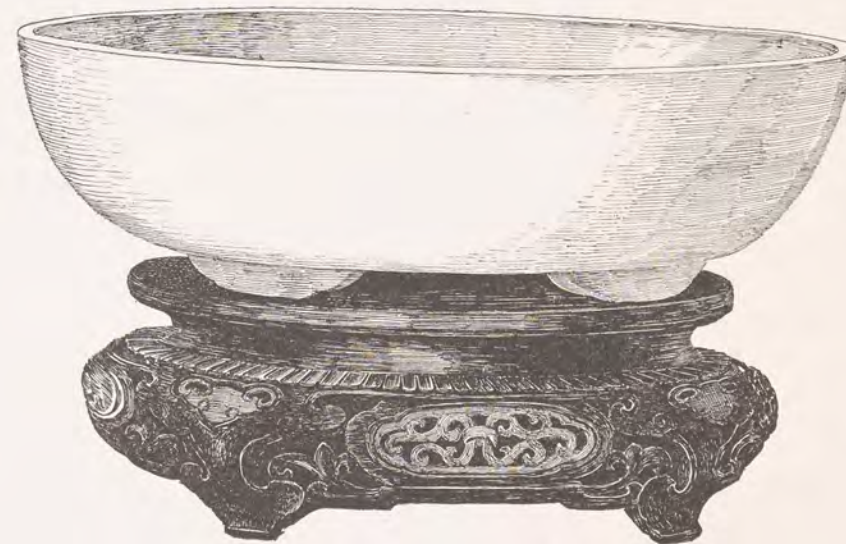
The vine, the stem of which is carved in openwork with tendrils twisting round, bears two of the peculiar spindle-shaped warty gourds, which lie side by side, covered with leaves and spirally curled tendrils, carved in relief upon their surface. Upon one large leaf, which is carved with its natural veins and has its margin partially recurved, reclines a mantis with its head drawn down, as if for protection, between the formidable shield-like spiny tibiae of its fore legs—its natural attitude when hiding upon a leaf of the same color as its own green body. The little piece is an example of the skill of the patient Chinese artist, who shows himself at his best on an exact copy from nature.

The material is translucent, very compact and homogeneous, and is characterized by the entire absence of inclusions of any importance.



547  
548  
549  
550 CH'EN-LUNG (1736-1795) ALTAR SET (*Ssu Shê*) CHINA

Dimensions: 547= $5.72 \times 3.03 \times 1.97$ inches.	$14.5 \times 7.7 \times 5.0$ centimetres.	Weight: 15.835 ounces.	448.951 grammes
548= $6.31 \times 3.53 \times 1.59$ inches.	$16.0 \times 9.0 \times 4.0$ centimetres.	15.937 ounces.	451.858 grammes
549= $1.41 \times 4.97$ inches.	$3.6 \times 12.6$ centimetres.	8.084 ounces.	229.202 grammes
550= $1.41 \times 4.97$ inches.	$3.6 \times 12.6$ centimetres.	8.163 ounces.	231.424 grammes
Specific gravity: 547=2.9564; hardness: 6.5.	<i>Nephrite</i>		
548=2.9516; 6.5.	<i>Nephrite</i>		
549=2.9541; 6.5.	<i>Nephrite</i>		
550=2.9522; 6.5.	<i>Nephrite</i>		
Color: White with very light greenish tint			





An altar set intended to be used for offerings of wine and fruit. It consists of four pieces—two vases for wine (Nos. 547 and 548) and two shallow dishes for fruit (Nos. 549 and 550).

The vases (*p'ing*) are of unequal height, but of the same flat ovoid form and graceful design. No. 547, the smaller of the two, has two curved scroll-handles carved in openwork, a low rimmed foot, and a neck hollowed from the shoulder to expand gently toward the mouth, which is of oval shape encircled by a plain band. The low rounded cover is surmounted by a one-horned dragon of lizard-like form, the peculiar dragon of ancient bronze design known as *ch'ih*. Standing upon a rock connected with the foot of the vase is a phoenix, executed in bold relief with openwork, under the shade of a blossoming tree-peony (*Paeonia moutan*), which springs from the same rock behind. In No. 548 the rocks are higher and are more elaborately carved, while the scroll-handles are conventionally carved in the form of dragons, and the lizard-like dragon at the top of the cover is carved in openwork. The vases, mounted upon the same openwork rosewood stand, make a charming pair, all the more so in



is seen, suggesting a former crystalline structure, as well as an uneven veining of two different faintly colored nephrites.

that they differ only very slightly in form and design. The phoenix in No. 548 has in its beak a spray with a large blossom of the peony upon it.

Each dish (Nos. 549 and 550) is provided with four scroll-feet, and the bottom inside is carved in the form of a medallion in high relief with a pair of bull-head fish (*nien yü*), and between them a musical stone (*chi ch'ing*) strung to a ju-i sceptre. From this combination the Chinese read, in the punning way in which they delight, the sentence, *Nien nien chi ch'ing ju-i* ("Year by year, good fortune and all you wish for!")

The vases are both of the same translucent, homogeneous and compact material, showing, when a strong light is passed through the pieces, a delicate marking which suggests a former crystalline structure, with a very minute vein on the base of No. 548, with brown inclusions.

The pair of small fruit-dishes (*kuo p'an*) are also of beautifully translucent, homogeneous and compact material. When a strong light is allowed to pass through them, a delicate mottling is seen, suggesting a former crystalline structure, as well as an uneven veining of two different faintly colored nephrites.

551 INCENSE-BURNER WITH COVER (*Kai Lu*)  
CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 3.84 × 5.34 inches. 9.8 × 13.6 centimetres.  
Weight: 1 pound 3.893 ounces. 563.983 grammes  
Specific gravity: 2.9596; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

An incense-burner, in the shape of a covered bowl, with a double circular rim round the foot, and lightly incised borders of ornamental fret encircling the edges of the bowl and the cover, the remainder of both being decorated with two broad bands of openwork design filled with flowers of the tree-peony (*Paeonia moutan*), freely and naturally rendered. The bowl has two handles, and the cover is crowned by a flat round knob of the same artistic floral design, cleverly executed in openwork.

The material of this piece has taken a beautiful polish, even on the projecting scroll of the pierced work, and the relief sculpture is very fine. Throughout the piece there are a number of inclusions, from one half to six millimetres across, which are apparently nephrite.



552 CH'EN-LUNG (1736-1795) MEDALLION (*P'ai-tzu*)

CHINA

Dimensions: 2.84 × 3.03 × .19 inches. 7.2 × 7.7 × .5 centimetres. Weight: 2.113 ounces. 59.925 grammes  
Specific gravity: 2.9426; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A medallion, looped above and below, to be worn suspended to a lady's dress, but now mounted upon a beautifully carved ironwood stand and used as a miniature screen. It is charmingly carved in openwork in the form of a basket filled with blossoming sprays of

lotus, surrounded by ornamental scrolls, the finer details being finished by engraving.

The material of the medallion is translucent and compact, with delicate green inclusions.



553

ORNAMENTAL PLAQUE (*Ch'a P'ing*)

CHINA

CH'IENT-LUNG (1736-1795)

Dimensions:  $5.31 \times 2.62 \times .72$  inches.  $13.5 \times 6.7 \times 1.8$  centimetres.  
 Weight: 8.583 ounces. 243.336 grammes  
 Specific gravity: 2.9523; hardness: 6.5. *Nephrite*  
 Color: White with a faint greenish tint and a few stainings of light russet

A little oval plaque, carved in the form of a fish leaping from the waves, which stand out at the base in relief, with crests curling half-way up the body of the fish. It is mounted on a wooden stand as an ornament for the writing-table.

The material is translucent and homogeneous, with subtranslucent whitish inclusions like tiny flakes of snow.



554

CH'IENT-LUNG (1736-1795)

CIRCULAR PLAQUE (*P'ai-tzū*)

CHINA

Dimensions:  $3.25 \times .38$  inches.  $8.3 \times 1.0$  centimetres. Weight: 3.328 ounces. 94.3412 grammes  
 Specific gravity: 2.9723; hardness: 6.5. *Nephrite*  
 Color: White with greenish tint

A rounded plaque carved in openwork with the form of a dragon coiled in the midst of a reticulation of dense sprays of the tree-peony (*Paeonia moutan*).

555

CH'IENT-LUNG (1736-1795)

PAPER-WEIGHT (*Shu Chên*)

CHINA

Dimensions:  $1.53 \times 2.75 \times 1.69$  inches.  $4.3 \times 7.0 \times 3.9$  centimetres. Weight: 5.044 ounces. 143.003 grammes  
 Specific gravity: 2.9558; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A paper-weight cleverly fashioned in the form of two storks, a larger and a smaller one, lying side by side, with heads pointing in opposite ways and legs folded tightly beneath. They carry two sprays: the large one a branch of the *wu-tung* tree (*Dryandra cordata*), with its capsular fruit, which grows on the margins of the leaves, bursting open characteristically so as to display the seeds inside; the other a branch of the sacred peach—the fruit of longevity. Storks are the

messengers of the gods in Taoist mythology, and are often represented bringing fruit or flowers as gifts to men from the realms of the immortals.

The material of this piece is of remarkable purity, giving opalescent reflections when the thinner parts are viewed by a strong light. The workmanship is excellent.

556

CH'IENT-LUNG (1736-1795)

GIRDLE-BUCKLE (*Tai Kou*)

CHINA

Dimensions:  $2.19 \times 3.25 \times .16$  inches.  $5.5 \times 8.2 \times .4$  centimetres. Weight: 1.219 ounces. 34.576 grammes  
 Specific gravity—hook: 2.9534; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A buckle for a lady's girdle, carved in openwork in the form of a silkworm moth. The wings are perforated and filled in with scroll designs of fungus pattern.

The material is translucent, homogeneous and compact, and by transmitted light shows a mottling of an opaque white substance, undoubtedly nephrite in another form.

557

CH'IENT-LUNG (1736-1795)

LIONS (*Shih-tzū*)

CHINA

Dimensions:  $1.78 \times 3.62 \times .69$  inches.  $4.5 \times 9.2 \times 1.7$  centimetres.  
 Weight: 3.651 ounces. 103.506 grammes  
 Specific gravity: 2.9548; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint



A typical little carving of the Chinese idea of a lion, its fore feet resting upon a brocade ball with ribbons attached, accompanied by a cub lying down in front. The former is represented with curly mane, long bunches of hair down the spine, and a very bushy tail floating in two divisions. Conventional flames proceeding from the shoulders and hips mark its supernatural character.

The material of the piece is translucent, compact and homogeneous, with one faintly darker vein in the back, and a large patch of grayish inclusions in the lower part.



558 CH'IENT-LUNG (1736-1795) DOUBLE SNUFF-BOTTLE (*Shwang Yen Hu*) CHINA

Dimensions:  $2.91 \times 1.69 \times .69$  inches.  $7.4 \times 4.3 \times 1.7$  centimetres. Weight: 3.449 ounces. 97.7905 grammes  
 Specific gravity: 2.9656; hardness: 6.5. *Nephrite*  
 Color: White of very faint gray tone

A pair of snuff-bottles, one of round cylindrical section, the other of square section, cut from one piece and joined together by an openwork rectangular scroll which extends from the neck to the base. The neck in each case curves gently up to the mouth. The decoration, which is simple and very delicately executed, consists of a finely incised scroll around the top and base of the cylindrical bottle, and a

band of geometrical fret around the top and base of the other. The body of the cylinder is decorated with three sprawling rain-dragons, and that of the other with a band of diamond-shaped spaces in each of which is an incised swastika character. The workmanship throughout is very delicate and the design unique.

559 CH'IENT-LUNG (1736-1795) GIRDLE-PLAQUE (*Tai Pan*) CHINA

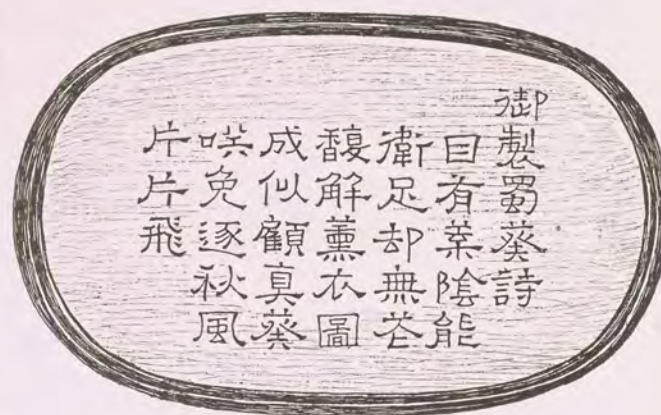
Dimensions:  $3.78 \times 2.69 \times .62$  inches.  $9.6 \times 6.8 \times 1.6$  centimetres. Weight: 2.655 ounces. 75.257 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with greenish-gray tint

An oval plaque engraved with an imperial verse of rhyming stanzas composed in admiration of a picture of hibiscus flowers—the yellow *Hibiscus Manihot*, or rose-mallow, of the province of Ssu-ch'uan:

“VERSE COMPOSED BY THE EMPEROR UPON THE SHU KUEI

“The flower is enveloped below in a thick cloud of dense foliage,  
 The leaves of which, though not strongly scented, are used to perfume the clothes.  
 The picture is an exact copy of nature, and the very petals of the flowers,  
 Bending to escape the autumnal blast, seem on the point of flying away.”

The material is dull in appearance, and contains a number of inclusions of a white, more opaque, form of nephrite.

560 CH'IENT-LUNG (1736-1795) MEDALLION (*P'ai-tzū*) CHINA

Dimensions:  $2.25 \times 1.94 \times .34$  inches.  $5.7 \times 4.9 \times .9$  centimetres. Weight: 1.943 ounces. 55.084 grammes  
 Specific gravity: 2.9372; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

An oval medallion in the form of a shield, surrounded by an ornamental border which is carved in openwork at the top for suspension, to be worn as a pendant or amulet. On one side of the shield is a blossoming spray of the tree-peony, emblem of rank; on the other side, within a frame in the middle, is an inscription in four Chinese

characters, *Hua ch'uan ju-i*, meaning “Increasing riches and wishes fulfilled!”

The material shows traces of a slightly darker nephrite, but otherwise the piece is remarkably pure in color and texture.

561 CH'IENT-LUNG (1736-1795) PENDANT (*P'ai-tzū*) CHINA

Dimensions:  $2.34 \times 1.75 \times .41$  inches.  $5.9 \times 4.4 \times 1.0$  centimetres.  
 Weight: 1.752 ounces. 49.670 grammes  
 Specific gravity: 2.9435; hardness: 6.5. *Nephrite*  
 Color: White with faint greenish tint

An oblong pendant worn as an amulet, designed in the form of a shield, with the handle carved in openwork for suspension as a pair of archaic dragons with scroll bodies. The shield is decorated on one side in bold relief with a boy paddling a boat laden with a basket of peony flowers, emblems of rank and honor. On the other side an inscription is engraved in slight relief, within a square panel, in four antique characters, reading, *Tsai lai hua ch'uan* (“May it bring heaps of money!”).

The material is translucent, very homogeneous and compact.



562 CH'IENT-LUNG (1736-1795) MEDALLION (*P'ai-tzū*) CHINA

Dimensions: 2.38 × .22 inches. 6.0 × .6 centimetres. Weight: 1.397 ounces. 39.610 grammes  
Specific gravity: 2.9527; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A medallion carved in openwork in the form of two round cash with square holes in the middle, strung together side by side by a cord held in the mouth of a bat, the ends of the cord terminating below in tassels, curled up from exigence of space. The inscription on the obverse of the coin, written in antique Chinese script, is *Yi chieh*

*mei shou* ("May it conduce to great longevity!"). On the reverse is inscribed in Manchu Tartar script, *Pao Yun*, the name of the government mint of the province of Yunnan.

Of translucent, homogeneous and compact material. Several tiny veinings are visible, but otherwise it is perfect in color and texture.

563 CH'IENT-LUNG (1736-1795) PENDANT (*P'ai-tzū*) CHINA

Dimensions: 2.09 × 1.88 × .19 inches. 5.3 × 4.7 × .5 centimetres. Weight: .766 ounce. 21.713 grammes  
Specific gravity: 2.9521; hardness: 6.5. *Nephrite*  
Color: White with faint greenish tint

An oval pendant worn as an amulet, carved in openwork with felicitous symbols. To the loop at the top is suspended a musical stone upon which hang two interlacing rings by cords terminating below in tassels which curve inward to enclose the character *chi*, which means "good fortune." The sides are carved in the form of two bats, emblems of happiness.

This is a very beautiful little piece. When a strong light is allowed to pass through it, it is seen to be of remarkable purity of color and texture.

564 CH'IENT-LUNG (1736-1795) OBLONG PLAQUE (*Tai Pan*) CHINA

Dimensions: 2.75 × 3.5 × .5 inches. 7.0 × 9.0 × 1.3 centimetres. Weight: 4.179 ounces. 118.4754 grammes  
Specific gravity: 2.9652; hardness: 6.5. *Nephrite*  
Color: White with greenish tint

An oblong plaque, the mounting of a ju-i sceptre, with rounded corners and carved in openwork with a pair of egrets standing in the water in the middle of a clump of lotus-plants.

565 CH'IENT-LUNG (1736-1795) MEDALLION (*P'ai-tzū*) CHINA

Dimensions: 2.69 × .22 inches. 6.8 × .6 centimetres. Weight: 1.376 ounces. 39.008 grammes  
Specific gravity: 2.9643; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

An ornamental medallion, to be worn on the girdle, of circular form, pierced and engraved in the shape of a butterfly with two wheels enclosed within its wings, the centres of which are movable so as to revolve within the naves. They represent the precious "Wheel of the

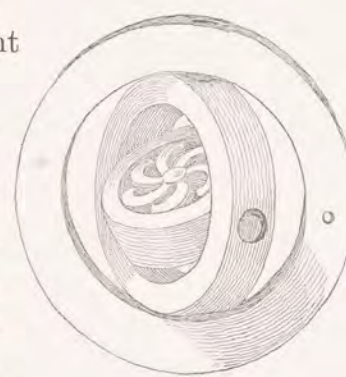
Buddhist Law," called *Fa Lun*. The disc is dotted as if jewelled, and the centre is carved to represent two crossed *vajra* sceptres.

The material is free from flaws or impurities of any kind, and is perfect in color and texture.

566 CH'IENT-LUNG (1736-1795) WHEELS (*Lun*) CHINA

Dimensions: 566=2.69 × .41 inches. 6.8 × 1.0 centimetres. Weight: 2.188 ounces. 62.035 grammes  
567=2.41 × .19 inches. 6.1 × .5 centimetres. 1.287 ounces. 36.482 grammes  
Specific gravity: 566=2.9519; hardness: 6.5. *Nephrite*  
567=2.9546; 6.5. *Nephrite*  
Color: 566=White with faint bluish tint  
567=White with faint greenish tint

Two ornaments, in the shape of concentric circles, representing the Buddhist "Wheel of the Law" (*Fa Lun*). The first (No. 566), which is remarkably pure in material and color and perfect in texture, is carved in one piece in three concentric rings so as to move, each on its own axle, in planes at right angles to each other, in the style of the armillary sphere. The middle ring is carved in



openwork with flaming rays, and is the same on both sides. With this exception, the whole piece is undecorated. The outer ring is perforated for suspension.

The second (No. 567) is carved in one piece in openwork so as to revolve on a movable axle, and is encircled with scrolls in relief representing flames.



568 CH'IENT-LUNG (1736-1795) PAPER-WEIGHT (*Shu Chên*) CHINA

Dimensions:  $2.59 \times 2.78 \times .19$  inches.  $6.6 \times 7.1 \times .5$  centimetres. Weight: 1.988 ounces. 56.352 grammes  
 Specific gravity: 2.9496; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

An ornamental paper-weight in the form of a winged fish with dragon's head (the *yü-lung*, or fish-dragon) curled around backward so that the head meets the tail, leaving a hole in the centre.

The winged fish-dragon is often alluded to in Chinese legends. One of them relates that the sturgeon of the Yellow River, which makes the ascent of the river in the spring of the year, becomes transformed

into a dragon if it succeeds in passing the rapids of the famous gorge called *Lung Môn*, or the "Dragon's Gate." This transformation has become typical of the success of graduates at the literary examinations, and the published roll of the successful candidates is called the "Dragon List."

569 CH'IENT-LUNG (1736-1795) PIERCED MEDALLION (*Pi*) CHINA

Dimensions:  $2.0 \times .34$  inches.  $5.1 \times .9$  centimetres. Weight: 1.525 ounces. 43.230 grammes  
 Specific gravity: 2.9494; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A medallion, perforated in the middle with a circular hole, carved in imitation of one of the ancient round medallions called *pi* and used as insignia of rank. A dragon of ancient bronze design is coiled round on one side, boldly carved in high relief, holding a branch of

the sacred fungus (*ling-chih*) in its mouth. The other side has a mammillated design over the whole ground, indicating grain.

This is a piece of nephrite of almost absolute purity of color and texture.

570 CH'IENT-LUNG (1736-1795) PENDANT (*P'ai-tzũ*) CHINA

Dimensions:  $2.19 \times 1.47 \times .19$  inches.  $5.5 \times 3.7 \times .5$  centimetres. Weight: .599 ounce. 16.975 grammes  
 Specific gravity: 2.9234; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

A pendant, of oval outline, delicately carved in openwork with the character for "double joy" (*shuang hsi*), symbolical of wedded bliss, in the middle; surrounded by a bat, emblem of happiness, above; a sacred fungus, emblem of longevity, below; and a dragon with body rising in floating scrolls on either side. The bat is perforated for

suspension. This is a wedding ornament, and, judging from the double dragon, must have been worn by an imperial consort.

The specimen is a piece of great purity of color and texture, and of fine workmanship.

571 CH'IENT-LUNG (1736-1795) MEDALLION (*P'ai-tzũ*) CHINA

Dimensions:  $2.41 \times .19$  inches.  $6.1 \times .5$  centimetres. Weight: .955 ounce. 27.036 grammes  
 Specific gravity: 2.9570; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

A round medallion, worn as an amulet, carved in openwork with felicitous symbols. The character *shou*, "longevity," occupies the centre, with a sacred fungus upon either side, and a bat, emblem of happiness, above and below, forming, with connecting scrolls, an intricate border surrounding the antique character in the middle.

There are on one side several inclusions of a white, more opaque substance, evidently nephrite; otherwise the material is of great purity. The color is very beautiful and the workmanship very fine.

572 CH'IENT-LUNG (1736-1795) MEDALLION (*P'ai-tzũ*) CHINA

Dimensions:  $2.12 \times .19$  inches.  $5.4 \times .4$  centimetres. Weight: .621 ounce. 17.602 grammes  
 Specific gravity: 2.9384; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

A round medallion delicately carved, in intricate scrolls of openwork pattern, with archaic characters interwoven with symbols and floral sprays. It is an amulet, with four characters in the middle reading, *Chi hsiung ju-i*, which means, "Good fortune and every wish ful-

filled!" The bat above is an emblem of happiness; the sacred fungus at the sides, of longevity; and the sprays of peony below, of rank and emolument. The bat is perforated for suspension of the amulet.

The material is remarkably pure in color and texture.



573 CHIEN-LUNG (1736-1795) GIRDLE-BUCKLE (*Tai Kou*) CHINA

Dimensions:  $1.34 \times 1.91 \times .31$  inches.  $3.4 \times 4.8 \times .8$  centimetres. Weight: .622 ounce. 17.637 grammes  
Specific gravity: 2.9592; hardness: 6.5. *Nephrite*  
Color: White with faint grayish tint

A child's girdle-buckle, delicately carved in openwork in the form of a crab with a plant in its claws indicated by a formal scroll. The two studs at the back are designed in the shape of flowers.  
The nephrite is entirely free from impurities, and the piece is perfect in both color and texture.

574 CHIEN-LUNG (1736-1795) OVAL PENDANT (*P'ai-tzū*) CHINA

Dimensions:  $2.53 \times 1.59 \times .19$  inches.  $6.4 \times 4.0 \times .5$  centimetres. Weight: .601 ounce. 17.036 grammes  
Specific gravity: (not given); hardness: 6.5. *Nephrite*  
Color: White with faint grayish tint

An ornamental pendant, of oval shape, delicately carved in openwork, with the round longevity character (*shou*) in the middle, within a circular frame of cup-like discs attached to fillet loop-scrolls above and below. Both sides are identical.  
One of the most brilliantly polished pieces in the Collection.

575 CHIEN-LUNG (1736-1795) PAPER-WEIGHT (*Shu Chén*) CHINA

Dimensions:  $3.34 \times 1.59 \times .19$  inches.  $8.5 \times 3.2 \times .8$  centimetres. Weight: 1.293 ounces. 36.674 grammes  
Specific gravity: 2.9560; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A little segment of bamboo, with flattened jointed stem, which has leafy branches sprouting out on either side, above and below, the clumps of leaves being carved upon the stem in relief with openwork. The other side is flat so that it may rest evenly on the table.

A dainty little piece of translucent, homogeneous and compact material, with a vein on one side a little darker in color than the mass, but otherwise the material is pure.



576 CHIEN-LUNG (1736-1795) PENDANT (*P'ai-tzū*) CHINA

Dimensions:  $2.81 \times 1.81 \times .28$  inches.  $7.2 \times 4.6 \times .7$  centimetres. Weight: 1.4000 ounces. 39.6845 grammes  
Specific gravity: 2.9637; hardness: 6.5. *Nephrite*  
Color: White with very faint grayish-green tint

A pendant or girdle-plaque carved in an openwork design described by the Chinese as *Hsi Ch'iao tun mei*, "The magpie resting under the plum tree," the bird being shown sitting on a filleted cross-bar and framed in an intricate floral scroll.

The piece has been cut transversely across the apparent bedded structure of the material, which is translucent, homogeneous and compact, and free from impurities other than infiltration in internal fractures. The polish is good.

577 CHIEN-LUNG (1736-1795) ORNAMENT (*P'ai-tzū*) CHINA

Dimensions:  $2.44 \times 1.47 \times .34$  inches.  $6.2 \times 3.7 \times .9$  centimetres. Weight: 1.158 ounces. 32.849 grammes  
Specific gravity: 2.9425; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint



An ornament, of oblong form, elegantly and elaborately carved in openwork, to be worn suspended on a lady's dress. Above are two pomegranates in the midst of delicate floral scrolls; below is an oblong shield engraved with three Chinese characters filled in with gold, surrounded by a frame composed of a double interlacing square, making a kind of endless knot. The carving throughout is very cleverly executed.

The inscription, *Po tzū t'ou*, means "Picture of a hundred children," and refers to the pomegranate design above, as well as to the endless line figures in the knot. The ripe fruit of the pomegranate, as it bursts open, displays a profusion of seeds; and as the character *tzū* means "children" as well as "seeds," it is taken as a symbol of an endless line of offspring.

The material is very homogeneous and compact, with only a very few minute veins, a trifle darker in color, in the upper part of the piece.



578

CH'EN-LUNG (1736-1795) AMULET (*P'ai-tzū*)

CHINA

Dimensions:  $5.34 \times 3.16 \times .31$  inches.  $13.6 \times 8.0 \times .8$  centimetres.  
 Weight: 5.726 ounces. 162.353 grammes  
 Specific gravity: 2.9678; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

An amulet, shaped in the form of a *pi*, the ancient circular tablet with central round hole, elaborately carved in openwork with dragons and phoenixes, finished in minute detail on both sides of the tablet. This is connected with the loop-handle of scroll design above by two coiling dragons with serpent-like

bodies. The inscription, in archaic script passing down the centre, reads *Ch'ang yi tzu sun*, "A long line of sons and grandsons." The same inscription is often found on bronze basins and mirrors of the Han dynasty, dating from about the Christian era. Such amulets are made to be suspended upon the curtains of a bridal bed.

The polish of the piece is dull, but the material is pure, with traces, under a strong light, of a perpendicular veining a trifle more opaque and darker in color than the mass.

579

CH'EN-LUNG (1736-1795)

MEDALLION (*P'ai-tzū*)

CHINA

Dimensions:  $2.84 \times 2.47 \times .28$  inches.  $7.3 \times 6.3 \times .7$  centimetres. Weight: 1.712 ounces. 48.5475 grammes  
 Specific gravity: 2.9613; hardness: 6.5. *Nephrite*  
 Color: White with faint grayish tint

An oblong medallion intended to be sewn on the girdle, or otherwise, as an ornament. It consists of a rectangular frame enclosing a design of pierced openwork in which are shown two deer, emblems

of rank as well as of longevity, browsing under a pine and a bamboo, two of the sacred trees of the Taoists, backed by a tracery of open scroll work. Polished on one side only.



580

CH'EN-LUNG (1736-1795)

SCREEN (*Ch'a P'ing*)

CHINA

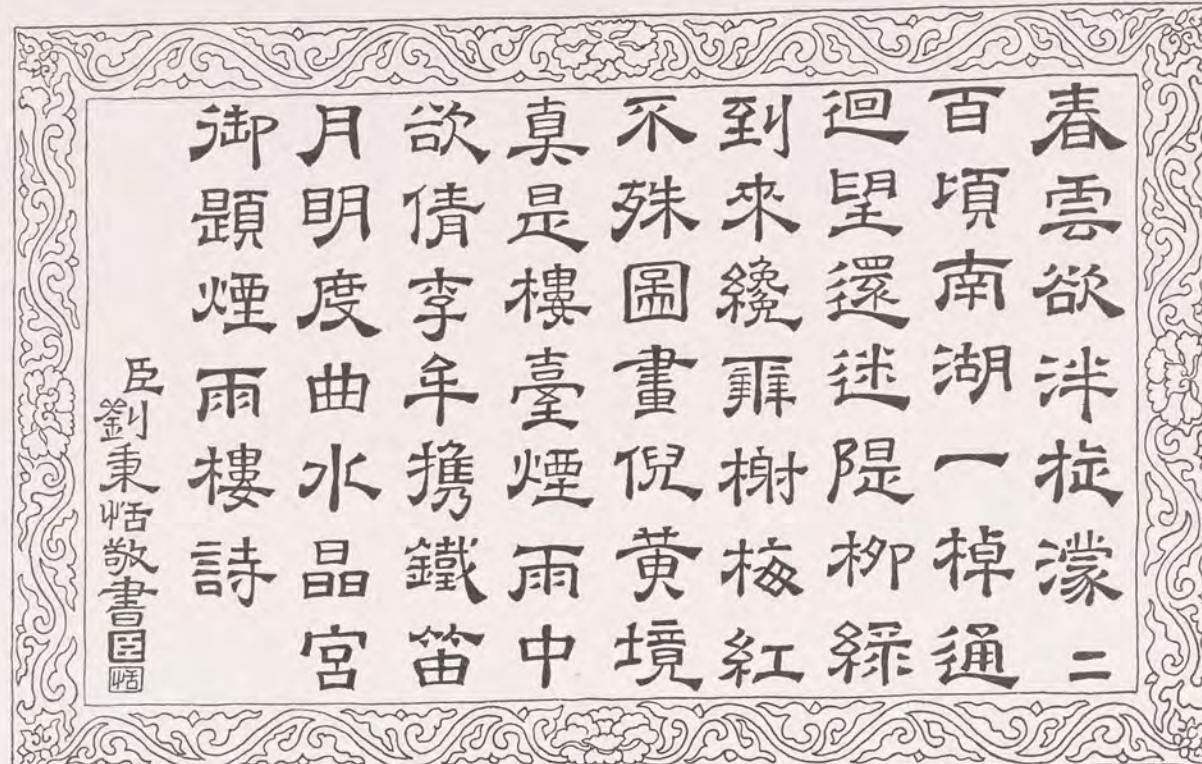
Dimensions:  $8.75 \times 8.5$  inches.  $22.2 \times 21.6$  centimetres. Weight: 13.815 ounces. 391.680 grammes  
 Specific gravity: 2.9584; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint



A miniature screen of oblong form, with the face carved, in slight relief, with a bird's-eye view of an island covered with buildings surrounded by trees, among which the drooping willow largely predominates. It represents a *hsing kung*, or imperial travelling palace, such as must be prepared for the residence of the emperor and his suite wherever he may stop during one of his journeys through the provinces. The buildings are arranged in a succession of courtyards, encircled by walls in the usual Chinese fashion, communicating by covered corridors. There is a large two-storied pavilion (*lou*) in the

middle, which gives its name to the palace. A wide square building on a terrace in front has a flat roof to serve as a promenade for admiring the scenery of the gardens and lake, which is seen all round, the water being indicated by curved lines. The gardens are dotted with rockeries, bridges, and kiosks, one of them with a stone stairway leading down to the water.

The reverse side is engraved with an imperial poetic description, written in an antique script, and enclosed within an ornamental border of formal foliated scrolls starting from peony flowers which occupy the middle of each of the four sides. It reads as follows:



"The clouds of spring fast fade away and as quickly form again;  
While we cross in our small skiff the many-acred expanse of this southern lake,  
We turn round to glance back toward the shore, with its green fringe of willows,  
Or look forward as we draw near enough to see the red plum flowers on the terrace.  
The scene reminds one of a landscape painted by one of the old masters, Ni or Huang.<sup>1</sup>  
It is truly a picture of pavilions and towers encircled by mist and rain.<sup>2</sup>  
Would that we could summon Li Mao<sup>3</sup> to come with his iron flute  
And sing his magic lays by moonlight in these crystal halls!"

"Verses composed by the Emperor upon this 'Pavilion of Mist and Rain.'<sup>4</sup>

"Respectfully copied by his minister, Liu Ping-t'ien,<sup>5</sup> and sealed, *Ch'ên*, 'Minister,' in intaglio; *T'ien*, his cognomen, engraved in the usual way."

## 581 CH'EN-LUNG (1736-1795)

SCREEN (*Ch'a P'ing*)

## CHINA

Dimensions: 10.0 × 7.16 × .5 inches. 25.4 × 18.2 × 1.2 centimetres. Weight: 2 pounds 14.516 ounces. 1318.730 grammes  
Specific gravity: 2.9609; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

An oblong screen of upright form, mounted on a stand as a kind of picture, an ornament for the table, and carved on both sides with Taoist designs. On the obverse is represented a mountain scene with pines and other trees enveloped in clouds above. A temple stands upon a raised platform in one of the gorges, and an open pavilion with the roof supported by four pillars is perched upon a rocky platform above. The middle of the scene is occupied by a group of three figures, the star-gods of happiness, rank, and longevity, with the sceptre and different kinds of fruit in their hands. There is a pair of youthful attendants carrying flowers and fruit in the foreground, and standing on a table behind the group of divinities is a hooped tub with an immense flower growing in it. The reverse side of the plaque is carved with a similar mountain scene with water rushing down in a torrent, above which a stork is standing in the usual attitude, upon one leg, under an ancient pine, looking up to its mate, which is flying through the air above to join it.

The material of the screen is translucent, compact and homogeneous. When a strong light is allowed to pass through it, white, almost opaque, mottlings or inclusions, evidently also nephrite, are discernible throughout the mass.

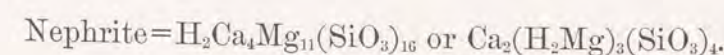
The microstructure of this piece is clearly the result of amphibolic alteration of jadeite. The rock consists of a microcrystalline to microcrystalline aggregation of fibres of colorless amphibole that extinguish light between crossed nicols in irregular patches, some of which are banded in parallel lines. These patches correspond to the

originally twinned pyroxene. In places the amphibole is in compact crystals. There is a curved fibration in one direction through the rock, along which it has cracked. A few small clouded spots appear to be impure muscovite.

Clarke's reduction of Walden's analysis gave the following results:

		Jadeite	R <sup>2</sup> /CaSiO <sub>6</sub>	Nephrite
Silica . . . . .	56.66	4.49	.70	51.47
Alumina . . . . .	2.74	1.91	.83	
Ferric oxide . . . . .	.56		.56	
Ferrous oxide . . . . .	.51			.51
Magnesia . . . . .	23.42			23.42
Lime . . . . .	12.52		.65	11.87
Soda . . . . .	1.16	1.16		
Water . . . . .	2.23			.93
	99.80	7.56	2.74	88.20

Abstract	
Nephrite . . . . .	88.20
Jadeite . . . . .	7.56
R <sup>2</sup> /CaSiO <sub>6</sub> . . . . .	2.74
Excess water . . . . .	1.30
	99.80



<sup>1</sup>Ni Yün-lin and Huang Tzū-chin, two celebrated landscape-painters of the Tang dynasty.

<sup>2</sup>A quotation from a poet of the Tang dynasty.

<sup>3</sup>Li Mao, the "Orpheus" of China, whose skill in playing upon the flute was so exquisite as to attract the monsters of the deep and draw the dragon-king from his palace, the "hall of rock-crystal."

<sup>4</sup>Three different "Pavilions of Mist and Rain" (*Yen Yü Lou*) are described in China, two situated in the province of Cheh-kiang: the first at Chia-hsing Fu, on an island in

the midst of the Mandarin Duck Lake (*Yuan-yang Hu*), built in the time of the Five Dynasties (A.D. 907-960); the second at Ch'u-chou Fu, in the K'u-shan Mountains, dating from the Tang dynasty. The third is at Mien-yang Chou, in the province of Hu-pei; but this could not be the one we want, as the Emperor Ch'ien-lung never travelled there. The one mentioned first is probably the "Pavilion of Mist and Rain" sketched here, which was built on an island in a lake.

<sup>5</sup>Liu Ping-t'ien, a well-known scholar and statesman of the reign of Ch'ien-lung (1736-1795).



582 ROUND BOWL AND COVER (*Yuan Kai Wan*)  
CH'EN-LUNG (1736-1795) CHINA

Dimensions: 6.38 × 6.66 inches. 16.2 × 16.9 centimetres.  
Weight: 2 pounds 12.999 ounces. 1275.727 grammes  
Specific gravity: 2.9511; cover, 2.9448; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

Round bowl, with cover of similar shape, so that the two united form a slightly flattened sphere. The surface is covered with spiral scrolls of clouds interrupted so as to leave the figures of five flying bats in slight relief; and the cover is similarly decorated with five bats flying in clouds, only a narrow band being left uncarved to match the plain band which encircles the rim of the bowl. The foot, carved in relief, is in the form of a large chrysanthemum flower with three rings of florets surrounding the central round depression, which is engraved with cross-hatched lines. The cover is carved with a similar ring, upon which stands in relief a floral button with the rings of florets toward the centre erected and re-curved so as to leave the middle of the button hollow.

The bat is the special emblem of happiness, its name having the name-sound *fu*, so that five bats symbolize the five happinesses referred to in the classical books, which are: (1) Longevity; (2) Riches; (3) Peace; (4) The Love of Virtue; (5) An End Crowning the Life.

The material of this remarkable bowl is translucent, homogeneous and compact, with delicate markings, seen by transmitted light, which suggest traces of a former crystalline structure.



583 CH'EN-LUNG (1736-1795) FLOWER VASE (*Hua Ch'a*) CHINA



Dimensions: 5.53 × 4.66 × 2.28 inches.  
14.0 × 11.8 × 5.8 centimetres.  
Weight: 9.483 ounces.  
268.871 grammes  
Specific gravity: 2.9588; hardness: 6.5. *Nephrite*  
Color: White with very light greenish-gray tint

A charming little flower vase modelled in the form of a lotus leaf gathered together and bound round with a band of ribbon, the ends of which are tied in a bow, the stalk of the leaf projecting below. The foliations following the natural venation of the leaf, and the corrugated recurved margin of its

uplifted edge, combine to make a fresh and delightful form.

The material is translucent, homogeneous and compact, marked with small inclusions of a slightly more opaque substance, apparently nephrite, accounting for the gray which influences the greenish tint of the piece. Running through the vase there is also a large vein, almost fibrous and sinewy, of another form of nephrite.



584 VASE WITH COVER (*P'ing*)  
CH'EN-LUNG (1736-1795) CHINA

Dimensions: 6.66 × 3.47 × 1.75 inches. 16.9 × 8.8 × 4.4 centimetres.  
Weight: 1 pound 1.892 ounces. 507.264 grammes  
Specific gravity: 2.9539; cover, 2.9554; hardness: 6.5. *Nephrite*  
Color: White with faint grayish tint

Vase of flattened ovoid form, on low foot, with short neck and handles in open scrollwork. A double ornamental line in slight relief circles the shoulder, and a broad band surrounds the mouth. The cover, of conical



form surrounded by a similar band, has a round knob at the top, above an encircling band of leaf-ornament. The foot is connected with the body of the vase by clouds carved in high relief and openwork, and similar cloud-scrolls cover the body, through which are passing three dragons, each carrying a different plant in its mouth,

—being sprays of peony, peach-blossom, and the longevity fungus, which they are bringing from the realms of the immortals.

The material is translucent, compact and homogeneous. When a strong light is allowed to pass through it, faint markings of a slightly more opaque mineral are seen to cross the mass horizontally.

## 585 CHI'EN-LUNG (1736-1795)

BOWL WITH COVER (*Kai Wan*)

CHINA

Dimensions: 4.5 × 3.62 inches. 11.4 × 9.2 centimetres. Weight: 10.415 ounces. 295.296 grammes  
Specific gravity: 2.9559; cover, 2.9694; hardness: 6.5. *Nephrite*  
Color: White with faint grayish tint

A little cup-shaped bowl minutely carved with floral designs and in such delicate openwork as to look like filigree work. The low foot is carved with a ring of petals in the form of a flower, and another ring, shaped like lotus petals, surrounds the base of the cup, carved in relief upon its surface. The rims of the cup and the cover are encircled by a band of fret brocade, and the cover is crowned with a conical knob carved in openwork in the form of a peony. The cup and the cover are decorated with broad bands of floral scrolls, carved in openwork into sprays of peonies, bounded above and below by ornamented borders of regular foliated pattern. In addition to this somewhat formal pattern, there are other flowers artistically but irregularly carved in relief so as to extend sometimes across the openwork bands. On the cup we see sprays of the typical flowers of the four seasons (*ssü chi hua*), depicted in order from right to left,—being: the peony, typical of spring; the lotus, of summer; the chrysanthemum, of autumn; and the plum, of winter. On the cover we have only two sprays—of the narcissus and the rose, both favorite flowers of the Chinese. At the bottom of the cup, inside, there is a branching stem of the *ling-chih*, the polyporus fungus of longevity. To use such a cup for tea or wine, it must be lined with silver; otherwise it is placed, in China, upon the table, filled with jasmine blossoms or other fragrant flowers.

The material is translucent, homogeneous and compact, and very sinevy in texture, the thinner parts showing a slight opalescence when a strong light is allowed to pass through the piece. In the cover there are several white and gray, almost opaque, inclusions that are probably nephrite.



## 586

SCREEN (*Ch'a P'ing*)

CHINA

CHI'EN-LUNG (1736-1795)

Dimensions: 6.78 × 5.91 × .72 inches. 17.2 × 15.0 × 1.8 centimetres.  
Weight: 1 pound 7.601 ounces. 669.092 grammes  
Specific gravity: 2.9518; hardness: 6.5. *Nephrite*  
Color: White with greenish tint



A little screen in the form of a circular disc standing on a broad, irregular rocky pedestal enveloped in curling waves, and partially canopied by scrolls of clouds, all carved in strong relief with openwork and mounted upon a carved rosewood stand as an ornament for the table. The face of the disc is carved in very bold relief with a pair of pheasants standing upon rocks from which spring a magnolia tree, a moutan-peony, and a chrysanthemum, all in full blossom. The back of the disc is decorated in low relief with a blossoming plum overshadowed by clouds, accompanied by a bamboo shrub and a *ling-chih* fungus growing, with a few blades of grass, upon the ground beneath the plum tree.

The material is of exceptional purity, with only the faintest internal marking. When held against the light the effect is very charming.

## 587

WATER-RECEPTACLE (*Hsi-tzū*)

CHINA

CHI'EN-LUNG (1736-1795)

Dimensions: 2.41 × 8.47 × 4.72 inches. 6.1 × 21.5 × 12.0 centimetres.  
Weight: 2 pounds 9.558 ounces. 1178.152 grammes  
Specific gravity: 2.9494; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A water-receptacle (*hsi-tzū*) for a writer's table, fashioned in the form of a double-gourd (*lu-lu*) lying on its side, with the vine, bearing

leaves, tendrils, and smaller gourds, winding over the surface, carved in bold undercut relief, a crossing branch of the vine dividing the



hollowed part into two at the waist. Compare with the double-gourd vase described under No. 588, which might be specified as a companion piece.

The double-gourd is produced by a peculiar variety of the calabash or bottle-gourd (*Lagenaria vulgaris*). It is a common symbol of longevity and also of a numerous progeny, being, as it is, so full of seeds. Hence the heading, "Double Gourd Vase and Dish of White Jade, Emblem of Sons and Grandsons for Ten Thousand Generations," found in the great Chinese catalogue of the collection of jades of the second emperor of the Southern Sung dynasty. This catalogue, in one hundred books, illustrated with seven hundred water-colors, and entitled "Ku Yü T'ou Pu" ("Illustrated Descriptions of Ancient Jades"), was prepared and published in 1176 by an imperial commission of nineteen members, including one writer and four artists, under the direction of the president of the Board of Rites, who wrote the first preface to it.



588

VASE OR BOTTLE (*P'ing*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 7.25 × 5.09 × 3.38 inches. 18.4 × 12.9 × 8.5 centimetres.

Weight: 2 pounds 7.094 ounces. 1108.316 grammes

Specific gravity: 2.9594; hardness: 6.5. *Nephrite*

Color: White with very light greenish tint



A vase or bottle (*p'ing*), with cover, fashioned in the form of an erect double-gourd, and also covered in bold undercut relief with a gourd-vine bearing leaves, tendrils, and smaller gourds, extending even over the cover.

This may be regarded as a companion to the water-receptacle described under No. 587; both are translucent, homogeneous and compact, but there are differences in the material. No. 588 is almost entirely free from veins, flaws, or cloudings, whereas when a strong light is allowed to pass through No. 587 the entire piece is seen to have a clouded appearance. At the thinly cut parts of No. 587 the structure appears almost crystalline, owing perhaps to a remaining trace of the original jadeite structure; while in the thin parts of No. 588 a sinewy character is apparent and a faint opalescent lustre is perceptible, differing in these respects from No. 587.



589

FLOWER VASE (*Hua Ch'a*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 6.38 × 2.56 × 2.34 inches. 16.2 × 6.5 × 5.9 centimetres.

Weight: 1 pound .114 ounce. 456.824 grammes

Specific gravity: 2.9626; hardness: 6.5. *Nephrite*

Color: White with light greenish tint

A flower vase exquisitely modelled in the shape of a Buddha's-hand citron, with the interior hollowed out to hold water.

The fruit called by the Chinese Buddha's-hand (*Fo shou*) is a cultivated variety of the *Citrus medica* (var. *Chirocarpa*), a kind of citron which bears a large fragrant fruit of this peculiar form, with divaricating carpels which look like fingers. The Chinese are fond of filling dishes with it to scent their rooms.



The vase has the form of a fruit supported upon its thick, round stalk, which springs from a short branch, surrounded by a reticulation of smaller twigs, all boldly carved in openwork. From the nearly square pedestal thus formed proceed two other little branches, one of which rises outside the vase, and the other spreads horizontally so as to encircle it with its leafy fruit-bearing twigs. The leaves are

naturally veined, and the two small citrons are of the same characteristic form as the vase, the exterior of which they decorate.

The material is translucent, homogeneous and compact, and shows a sinewy structure as well as a faint opalescence at the finger-ends. It contains tiny inclusions, evidently of jadeite, that are less translucent than the mass.

590

INCENSE-BURNER WITH COVER (*Kai-lu*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 5.41 × 5.41 inches. 13.7 × 13.7 centimetres.  
Weight: 2 pounds 3.358 ounces. 1001.877 grammes  
Specific gravity: 2.9565; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

An incense-burner in the form of a peculiarly shaped bowl with rounded body slightly constricted in the middle and expanding again at the mouth. Decorated round the top with a conventional foliated "palm-leaf" band in slight relief. Executed in high relief below are three phenixes, boldly designed so as to appear to support the bowl upon their backs and outspread wings, their tail-feathers being rolled up to form the three feet, while the projecting heads are carved in openwork to make three handles, upon each of which hangs a movable ring. The high, vaulted cover is similarly ornamented with three phenixes in relief, to the beaks of which are also suspended movable rings. The cover is crowned with a hollow knob with the rim recurved and carved to resemble a ring of floral petals.

This is a noteworthy piece because of the success with which a very elaborate and difficult design has been executed. The material is of remarkable purity, and has taken a beautiful polish.



591

WINE-PITCHER (*Chu-tzu*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 4.81 × 4.69 × 2.41 inches. 12.2 × 11.9 × 6.1 centimetres.  
Weight: 12.486 ounces. 353.977 grammes  
Specific gravity: 2.9626; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A small wine-pitcher or libation-cup with bulging quadrangular body, a low spreading foot, and a long neck rising almost straight up at one side, but expanding rapidly at the other into a wide flaring mouth with a broad protruding lip. On the straighter side of the neck is a loop-handle of floral design holding in suspension a swinging ring ornamented with buds in relief. The other decoration consists of incised leaves and vertical rows of buds in relief along the corners and on the faces in the style of the ancient crenellated or ridged libation-cups of bronze. The foot, which is hollowed out underneath, is decorated with incised leaves.

The material is translucent, homogeneous and compact, and has taken a fine polish.



592

CH'EN-LUNG (1736-1795)

ARTIST'S DISH (*Hsi-tzu*)

CHINA

Dimensions: 2.81 × 5.78 × 4.81 inches. 7.2 × 14.7 × 12.2 centimetres. Weight: 15.228 ounces. 431.718 grammes  
Specific gravity: 2.9567; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint

A dish designed to hold water for the artist's or writer's brush, exquisitely modelled in the form of a begonia leaf. The *Begonia discolor*, the *ch'iu hai tang* of the Chinese, is a favorite flower with

them. It occurs both wild and cultivated, and the plant is represented in all its natural details in this charmingly artistic piece.

A large leaf, with the veining engraved inside and carved in relief





The mineral is compact and translucent, with a large vein of some subtranslucent white mineral in the form of small spots in several parts of the dish.

outside, curves up all round, so that its irregularly serrated margin, with every fold reproduced, forms the rim of the dish. The contorted and reticulated stalk from which the leaf springs is carved in openwork, with its twigs and leaves, to make the handle; and another branch spreads from it over the bottom, covered with small leaves and flowers, and lifts one blossom above the rim, so as to balance the opening bud which surmounts the handle on the opposite side. Another twig with leaves and flowers growing upon it springs from the same stem to decorate the interior of the dish, from which it projects in full relief. The soft stalk, with its bulbous joints, is so naturalistically indicated by the finished polish that it looks as if one could crush it by too rough handling; and the twigs twist about and lie prone in a way that most forcibly strikes one familiar with the natural habit of this beautifully delicate flower. A splendid example of the most artistic work of the Chinese lapidary.

593 CH'EN-LUNG (1736-1795)

ARTIST'S DISH (*Pi Hsi*)

CHINA

Dimensions: 1.94 × 7.72 × 6.16 inches. 4.9 × 19.6 × 15.6 centimetres. Weight: 1 pound 2.459 ounces. 523.319 grammes  
Specific gravity: 2.9625; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint and spots of brown.

A dish of natural floral shape, artistically designed and splendidly executed in the form of a spray of begonia (*ch'iu hai t'ang*). The dish is formed of a large leaf, the uptilted edge of which makes an irregularly dentated rim, the veins of the leaf being carved all over the surface so as to stand out in relief below. The branched stem, which forms the handle of the dish, winds round the base underneath, and also supplies a little spray which bends down to ornament the interior of the dish, where it stands up in high relief, with the smaller leaves, flowers, and buds all perfectly reproduced. Upon one of the smaller leaves a praying-mantis (*Mantis religiosa*) crouches, with its head lifted above the rim of the dish, balancing the handle on the opposite side and supplying a natural motive for the worm-eaten holes in the large leaf, which look so realistic and which were evidently suggested to the artist by original flaws or discolorations in the piece.

The material is translucent, homogeneous and compact, with a few minute transverse veins.

594  
595  
596

CH'EN-LUNG (1736-1795)

ALTAR SET (*Lu, Ho, P'ing*)

CHINA

Dimensions: 594=6.19 × 8.5 × 4.81 inches. 15.7 × 21.6 × 12.2 centimetres. Weight: 3 pounds 3.629 ounces. 1463.685 grammes  
595=1.97 × 2.72 inches. 5.0 × 6.9 centimetres. Weight: 5.319 ounces. 153.634 grammes  
596=4.47 × 3.0 inches. 11.3 × 7.6 centimetres. 9.281 ounces. 263.124 grammes  
Specific gravity: 594=2.9485; hardness: 6.5. *Nephrite*  
595=2.9438; 6.5. *Nephrite*  
596=2.9468; 6.5. *Nephrite*  
Color: White with very light greenish tint

An incense-burning set of three pieces (*san shé*), of remarkable purity of material and color, homogeneousness and compactness of texture, and perfection of form and finish. It consists of:

An incense-burner (*hsiang-lu*) of rounded form, with slightly bulging body elaborately decorated with symbols of longevity and happiness and with Buddhist emblems. It stands upon four low, broad feet projecting outward from the circular rim which encircles the base. From the middle of the body on either side springs a loop-handle in the form of a leafy branch enclosing a fungus and supporting a bat which is spread out prone upon the surface, with the head pointing outward and the tips of the wings curling backward upon the rim of the urn. Each of these two handles, which are boldly carved in openwork, has suspended from its looped stem a movable ring. The body is decorated outside with four foliated medallions which stand

out in relief, their scrolled outlines modelled in conventional fungus shape, their interiors filled with four of the eight Buddhist emblems. The fish and conch-shell are on the front and back, surrounded by waves and canopied by clouds; the flaming wheel of the law and the endless knot are at the sides, enveloped in clouds. The cover, of vaulted shape, is decorated with the four other Buddhist emblems enclosed within the same foliated medallions,—the lotus flower and canopy on the front and back, the vase and umbrella on the two sides,—all enveloped in scrolled clouds. It is also furnished with four loop-handles, supporting movable rings, which spring from the shoulder and are surmounted by fungus-shaped heads, the four heads surrounding and attached to the round, hollow, flower-like knob which crowns the cover. This cover is carved inside with foliated and scroll patterns, and the four fungus heads have a minute round longevity character engraved in the middle of each.



A round box (*ho*), with cover, of plain undecorated outline, engraved at the top with the round form of the character *shou* (longevity), surrounded by a lightly incised circular band of rectangular fret design.

A vase (*p'ing*), of rounded beaker shape, with low foot, swelling

body, and slightly flaring neck. The body is decorated with two foliated medallions, framed in borders of conventional fungus-shaped scrolls in relief, each enclosing a similar design—the character *shou* (longevity), in antique script, flanked by two bats (symbols of happiness) enveloped by scrolls representing clouds.



597 CHIEN-LUNG (1736-1795) BOWL WITH TWO HANDLES (*Hsi-tzu*)

CHINA

Dimensions: 2.78 × 8.03 × 6.31 inches. 7.1 × 20.4 × 16.0 centimetres. Weight: 2 pounds 4.849 ounces. 1044.655 grammes  
Specific gravity: 2.9546; hardness: 6.5. *Nephrite*  
Color: White with very light greenish tint



A shallow bowl of good design, finely finished and perfectly polished. It stands on four low supports fashioned in the form of monsters' heads, and has two loop-handles at the sides, decorated with scrolls, springing from the heads of two horned winged monsters, the wings of which, carved in relief, lie in successive folds upon the broad upper rim of the bowl. From these loops are suspended movable rings engraved outside with floral scrolls. The body is surrounded by a fillet band composed of five parallel lines, and is decorated underneath with a pair of bats flying in the midst of clouds, carved in low relief within a large medallion, which is framed by a band of ornamental pattern, from which proceed four scrolls extending upward upon the lower part of the body between the feet. The interior of the bowl is carved in high relief with a floral design composed of interlacing sprays of four different plants, the *ling-chih* fungus (*Polyporus lucidus*), the *shui-hsien* (*Narcissus tazetta*), the bamboo, or *chu-tzu*, and the blooming peach, or *tao-hua* (*Amygdalus persica*). These flowers are not chosen at random. They suggest, in the punning way in which the Chinese delight, and which is so easy in a monosyllabic language, the combination *Ling hsien chu shou*, which means "The sacred genii worshipping the god of longevity." This is a common motive in native art, and the flowers supply all the words except the last, which is taken symbolically, the peach being the special symbol of the longevity god.

The material is translucent and compact, with a large vein which, from the rich brown staining which penetrates part of it, was evidently near the exterior of the mass. The staining is apparently that of a hydrous oxide of iron. With the exception of this and inclusions of a white, faintly opaque substance, probably nephrite, the material is remarkable for its purity and whiteness.

598 CHIEN-LUNG (1736-1795) PAIR OF CUPS (*Ch'a Wan*)

CHINA

Dimensions: 2.81 × 4.47 inches. 7.2 × 11.3 centimetres. Weight: 598=7.896 ounces. 223.880 grammes  
Specific gravity: 598=2.9585; hardness: 6.5. *Nephrite*  
599=2.9597 6.5. *Nephrite*  
Color: White with very light greenish tint

A pair of cups with covers, with plain undecorated surface, fashioned in the ordinary Chinese style. The tea is infused in these little

covered bowls, of which two are always placed upon the table during a formal Chinese visit, the host slightly raising his and beg-



ging the visitor to taste the tea when he thinks the visit has lasted long enough.

The material of these cups is translucent, homogeneous and compact. A large sinewy vein (which, however, is no flaw) runs across each bowl on one side, and on the other there is an apparent pudding-

stone structure consisting of masses of large white grains measuring one to three millimetres. The cups are so translucent that print in contact with them can easily be read through them. This is especially true of No. 599. Both are very sonorous.

600 CH'EN-LUNG (1736-1795) MARRIAGE WINE-CUP (*Ho-huan Pei*)

CHINA

Dimensions: 3.19 × 8.16 × 5.78 inches. 8.1 × 20.7 × 14.7 centimetres. Weight: 2 pounds .247 ounce. 914.170 grammes  
Specific gravity: 2.9542; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint and spots of russet

A cup of oval form, slightly bulging in the middle, with a prominent rim curving forward and upward in front, with a rounded protruding lip, supported upon four scroll feet curving outward; it has two loop-handles springing from large bats, with one wing partly folded, boldly carved in relief with openwork, and a movable ring suspended from each. Laid, as it were, upon the top of the cup, across the middle, so as to divide it into two parts with a common lip, there is elaborately carved in openwork a band of complicated design. It consists of a musical stone of characteristic form, having strung to it by a double looped ribbon two characters for "joy" (*hsi*), joined side by side into a compound character meaning "double joy," the special emblem of wedded bliss. The two ribbons are tied together below and then separate to define the lip of the cup, on either side of which hang two tassels, carved upon the front of the cup. At the back there stand out in like strong relief the loops formed by the tops of the ribbons, while in much slighter relief is carved a graceful pattern of interlacing scroll bands, representing the metal frame to which the pendant is suspended.

The purity of the material and color, the soft radiance, and the perfect form and finish of this exquisite nuptial cup cannot be described in words. It is one of the pieces which came into foreign hands after the looting of the Summer Palace near Peking in 1860, and may well have graced imperial nuptials there. What royal lips may have touched its graceful marge, what royal hands may have held it while quaffing the mingled wedding potion, we do not know; but it needs no such historic or romantic association to render it one of the most interesting beauties of the Collection.

The material of the cup is translucent, compact and very homogeneous, and free from all impurities with the exception of three brown weatherings that probably existed in the original boulder from which the piece was fashioned. On one side are some white opaque inclusions that are probably only another form of the same mineral. By strong reflected light the material is seen to be sinewy, and there is an apparent opalescent reflection.

The use of wine-cups at weddings is very ancient in China. The author of the "T'ao Shuo," a well-known work on Chinese pottery and porcelain, describes, in Book V, folio 19, a wedding wine-cup of cracked porcelain (*ko yao*), of the Sung dynasty, moulded in the

form of two peaches separable at pleasure into two cups, and provided with a saucer hollowed for its reception and exactly fitting the cup. He refers to the ancient "Book of Rites" for an account of the use of these cups during the marriage ceremony: how it is prescribed there that the wine-jar should be placed upon the altar to the east of the door, and have a basket-tray on its south side containing four



common cups and one double cup made of shell or gourd,—six cups in all,—out of which the bride and bridegroom must each drink three cups of wine. He quotes, in further illustration, from the works of Hu Ying-ling, a writer of the Ming dynasty, the following interesting description of one of these wine-cups made of jade:

"In the collection of Yang-chun, a high official resident in the capital (Peking), there is a bridal vessel of jade, carved into two cups united by a central channel along which the wine passes from one to the other; the two cups being supported by a phenix rising up from a crouching animal below. This, though not more than three inches high, is a perfect gem in its workmanship and finish."

601 CH'EN-LUNG (1736-1795) WALL-VASE (*Kua P'ing*)

CHINA

Dimensions: 7.5 × 5.25 × .88 inches. 19.1 × 8.2 × 2.2 centimetres. Weight: 10.805 ounces. 306.328 grammes  
Specific gravity: 2.9552; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A thin vase hollowed out at the back and grooved for suspension, with two handles carved in openwork in the form of phenixes: decorated with a triangular fret border above and below, conventional foliations on the neck, and three bands of ornament on the body, which is divided longitudinally into three sides. The broad band in the centre has a fret ground interrupted by the features of the gluttonous ogre. The narrow bands above and below are of scroll pattern. The angles are lightly ridged and dentated.

Microscopical examination of thin sections of the material of this vase shows it to be a good example of amphibolic alteration of jadeite. The rock is found to be a mass of microscopic to submicroscopic fibres of amphibole, with occasional large compact crystals, and having a few small fragments of colorless jadeite scattered through it.



602

LARGE BOWL WITH TWO HANDLES (*Ta Hsi-tzu*)

CHINA

CH'EN-LUNG (1736-1795)

Dimensions:  $3.34 \times 10.88 \times 8.06$  inches.  $8.5 \times 27.6 \times 20.5$  centimetres. Weight: 2 pounds 15.425 ounces. 1344.494 grammes  
 Specific gravity: 2.9569; hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

An artist's water-bowl (*Ta Hsi-tzu*), of rounded bulging form, supported upon four low scroll-like feet curving outward, with a projecting border round the rim, deeply indented and carved in relief above to represent a ring of heads of the branching sacred fungus (*Polyporus lucidus*),<sup>1</sup> an emblem of longevity. Two large looped handles spring from the sides, carved in relief and openwork in the form of lotus flowers, to the top of each of which clings a bat, the emblem of happiness, its wings spreading over the border of the bowl. Large movable rings hang from the loop-handles.

Seldom is such perfection of form, color, and polish found in a piece so large as this; while its charming simplicity of style and its almost entire absence of decoration recall the much-quoted line that "Beauty unadorned is oft adorned the most." This is another gem from the Summer Palace, where it may have figured, not as a water-bowl, but as a receptacle for the comfits and sweetmeats with which every Chinese banquet begins.

The material of the piece is translucent, very compact and homogeneous, and of almost absolute purity, there being very few internal markings of any kind visible even by a strong reflected light. The texture is sinewy, with an apparent opalescent reflection.



603

CH'EN-LUNG (1736-1795)

BEAKER-SHAPED VASE (*Hua Ku*)

CHINA



Dimensions:  $10.03 \times 4.81 \times 3.06$  inches.  $25.5 \times 12.2 \times 7.8$  centimetres.

Weight: 3 pounds 8.945 ounces. 1614.370 grammes

Specific gravity: 2.9574; hardness: 6.5. *Nephrite*

Color: White with light greenish tint

A tall beaker of slightly flattened quadrangular section, with somewhat flaring neck, the form and ornamental designs of which are copied from one of the archaic bronze sacrificial wine-vessels of ancient times. From the upper rim to the feet, each of which is surrounded by a band carved with rectangular fret, proceed eight longitudinal dentated ridges (*fei-chi*), projecting from each of the four sides and angles. The four faces of the bulging body are decorated with the features of the gluttonous ogre (*t'ao-tieh*), the rest of the vase in panels with scroll ornament and conventional foliated borders above and below.

In form the vase, which is of one piece, is well proportioned; the cutting is clear, the polish perfect, while the archaic severity of the style is relieved and softened by the charm of the translucent and very compact material, which presents the appearance of white wax. The darker internal cloudings are seen by transmitted light to be due, for the most part, to a white opaque included substance, probably nephrite.

604

PILGRIM'S BOTTLE (*Pei Hu P'ing*)

CHINA

CH'EN-LUNG (1736-1795)

Dimensions:  $10.78 \times 8.06 \times 2.38$  inches.  $27.4 \times 20.5 \times 6.0$  centimetres.

Weight: 5 pounds 5.436 ounces. 2422.060 grammes

Specific gravity: 2.9550; hardness: 6.5. *Nephrite*

Color: White with very light greenish tint

A large round flattened vase of the characteristic shape of the Chinese pilgrim's bottle, of slightly convex section, poised upon a low foot

<sup>1</sup> This plant (*chih*), usually called *ling-chih*, the prefix *ling* meaning "miraculous," is a branched woody fungus brightly colored and very durable, and it is for this last reason that it has been selected as an emblem of immortality. It is said by Chinese myth-makers to be of supernatural growth and auspicious omen, and it is often preserved on the altar of Taoist temples and represented in connection with their deities. We see

with a prominent marked rim, and having the rounded neck encircled near the top with a plain band. The handles on either side

it also being brought in the mouths of deer or hares as food for the immortals. The *ju-i* sceptre is modelled in this peculiar form, and one is generally held in the right hand of a Taoist divinity. Its peculiar shape sometimes supplies the form of a vase or wine-cup, and it is, in fact, a very common motive for art decoration in China.





605

VASE (*P'ing*) WITH COVER (*Kai*)  
CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 12.41 × 7.09 × 4.03 inches. 31.5 × 18.0 × 10.2 centimetres.

Weight: 6 pounds 6.414 ounces. 2903.440 grammes

Specific gravity: 2.9480; hardness: 6.5. *Nephrite*

Color: White with very light greenish tint

A large vase, with flattened globular body, a low slightly spreading foot hollowed out underneath, a moderately long neck curving upward to a rounded oblong mouth defined by an encircling band incised, like the band round the foot, with zigzag lines, and two loop-handles each formed of an elephant's head with recurved trunk and holding a swinging ring. The body of the vase, front and back, is decorated with a circular sunken medallion defined by a plain broad band which seems to rest on the rocky ledges which surround the base of the vase, and from which spring the blossoming plum trees which adorn the sides. Each medallion is filled with four of the eight Buddhist symbols of good luck surrounding one of the hundred forms of the ancient Chinese character *shou*, "longevity," and flanked near the top with swastikas, all carved in strong relief with the precision which characterized the work of the Ch'ien-lung period. These eight symbols are: On the front—(1) the sacred lotus; (2) the lucky diagram or endless knot, a symbol of longevity; (3) the conch-shell trumpet of victory, blown during religious ceremonies; and (4) the fish rising from the waves. On the back are—(1) the canopy hung with streamers; (2) the umbrella, the symbol of sovereignty; (3) the vase bound with fillets and resting on clouds; and (4) the sacred wheel of the law, enveloped in flames and whirling along in waves. The other decoration consists of scroll leaf-like lambrequin depending from and partly covering a band of fret round the neck, and a number of palm leaves in slight relief round the neck of the foot; while two magpies perch on the rocks round the base and one is flying above. The cover, which is dome-shaped, is deeply flanged to fit into the mouth of the vase, and is ornamented with an incised triangular fret round the rim and a band of foliated incised palm leaves in slight relief round the shoulder.

The material is remarkable for its whiteness and freedom from impurities. On one side there are white granular inclusions, fifty by twenty-five millimetres, forming a seam of white translucent material which contains minute white granules not unlike small grains of hominy. The bedded structure runs almost transversely across the flat side of the vase.

of the neck are in the form of dragons carved in openwork. Circular panels corresponding in form to the outline of the vase are sunk on both sides so as to be surrounded by a slightly raised border. These panels are filled with the same elaborately carved design, representing an imperial five-clawed dragon, depicted full-faced, just risen from out of the waves of the sea. In the midst of its coiling body is seen the precious jewel with effulgent rays, and the remainder of the ground is filled with scrolled masses of clouds. The design is executed in low relief, perfect in finish and polish, and brings out very charmingly the deep radiance and the beautifully translucent, very compact and homogeneous texture of the material. The piece is well worthy of the polished and scholarly Emperor Ch'ien-lung, who placed it in the Imperial Summer Palace near Peking, whence it was obtained when the palace was looted and destroyed in 1860 by the Anglo-French expedition which had marched upon Peking in order to punish the government of China for its bad faith in connection with the exchange of treaties in 1859.

By reflected light the structure of the material is shown to be slightly mottled, as if it still retained traces of the original structure of the jadeite. There are no inclusions, except near the upper edge of the piece, where there is a slight dark-brown veining.

This round flattened vase is really a form germane to China, and was originally intended, as its Chinese name signifies, to be slung upon the back of the traveller. The shape, like that of the double-gourd vase, with its constricted waist, so often seen, in Chinese pictures, hanging from the girdle of the pilgrim monk, was derived from one of the many varieties of the calabash, or bottle-gourd (*Lagenaria vulgaris*, L.). The gourd is a common symbol of longevity, as well as of a numerous progeny, in allusion to the fact that it is so full of seeds.





606 CHIEN-LUNG (1736-1795) VASE WITH COVER (*Pei Hu P'ing*) CHINA

Dimensions: 12.44 × 7.28 × 3.06 inches. 31.6 × 18.5 × 7.8 centimetres. Weight: 6 pounds 6.168 ounces. 2896.440 grammes  
 Specific gravity: 2.9576; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A large pilgrim's bottle of solid form and nearly quadrangular section, bulging very slightly in the middle, poised upon a small foot with prominent rim, with wide rectangular neck somewhat expanded at the mouth, which is encircled by a plain band. The cover, of vaulted form encircled by a similar plain band, is surmounted by an oblong knob hollowed in the centre, and is decorated outside with formal bands of scroll and floral ornament within panels, and the sides of the vase are similarly ornamented in low relief. The front and back of the vase are decorated with sunken round medallions corresponding in form to the outline of the body so as to be defined by a narrow border. The medallions are filled with an elaborately carved design, an imperial five-clawed dragon, drawn full-faced, coiling round the precious jewel, which emits effulgent rays, and surrounded by

scrolls of clouds. Toward the circumference are carved among the clouds, in the same low relief, the eight Buddhist emblems: the canopy above, the wheel of the law, the conch-shell, the umbrella, the knot, the flower, the jar, and the fish following in order. The looped handles, with rings hanging from them, spring from winged dragons vigorously carved in openwork. The size of the vase, the remarkable purity of the material, its translucency, compactness and homogeneity, the dignified beauty of the decoration, and the perfect finish of the workmanship, make this one of the most important pieces in the Collection. Its original home was in the Imperial Summer Palace near Peking, known as Yuan Ming Yuan, until its destruction in 1860 by the troops of the Anglo-French punitive expedition.

607 CHIEN-LUNG (1736-1795) SCREEN (*Ch'a P'ing*) CHINA

Dimensions: 6.66 × 9.09 × .5 inches. 16.9 × 23.1 × 1.3 centimetres. Weight: 2 pounds 13.092 ounces. 1278.340 grammes  
 Specific gravity: 2.9509; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

An oblong slab carved on both sides with Taoist scenes. The obverse side is carved in deep relief with a mountain landscape, with trees in the valleys and a pillared open pavilion on a terrace, a line of clouds enveloping the whole at the top. A mountain torrent forms a waterfall in the middle before it passes under a natural bridge in the rocks. To the right, a broad river with swiftly rushing current beats against an embankment supported by piles. Along its bank are wandering five ancient figures with staves in their hands, carrying various emblems, including a manuscript, a basket of flowers, a *ling-chih* fungus, and a branch of sacred berries. These figures represent the Wu Lao, the "Five Old Ones," who, according to the chronicle of the "Bamboo Books," were the spirits of the five planets, and appeared upon earth in the days of the ancient Yao, walking among the islets of the Yellow River. They are said also to have made their appearance at court in the tenth year of the reign of the Emperor Shun, the successor of Yao, and to have aided him with their counsels. He afterward erected a temple dedicated to the Five Planets, which are still sacrificed to.

The reverse side is decorated in slighter relief with a similar mountain scene enveloped in clouds, including a pavilion, a waterfall, and a natural rocky bridge, across which a spotted deer is running to join a second one standing in a valley beyond.

The material is translucent, very compact and homogeneous, with some delicate cloudings seen by transmitted light, due to white and faintly grayish subtranslucent inclusions, apparently also nephrite.

608

PILGRIM'S BOTTLE (*Pei Hu P'ing*)  
CHIEN-LUNG (1736-1795) CHINA

Dimensions: 9.09 × 6.94 × 1.69 inches. 23.1 × 17.6 × 4.3 centimetres.  
 Weight: 3 pounds 8.194 ounces. 1593.096 grammes  
 Specific gravity: 2.9530; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint and a few russet stainings

A small pilgrim's bottle of rounded outline and flat oval section, poised upon a slender foot, with a prominent band round its rim, a low neck bounded by a slight encircling band, and two small handles of curved scroll design upon the neck. Below these stand out two dragons executed in bold relief and openwork, which form, as it were, an additional pair of handles. The body of the vase, front and back, is decorated with a similar circular medallion with foliated outline standing out in slight relief, filled with an imperial five-clawed full-faced dragon, holding a flaming jewel in its right paw, all executed in higher relief, the ground being engraved with cloud-scrolls with flames flaring out over the surface. Another dragon executed in bold relief with openwork surmounts the cover. The carving throughout is splendidly executed.

The material is translucent, homogeneous and compact, with a brownish marking near the upper part of the vase, due apparently to the inclusion of long crystals of what may be particles of jadeite. These are more or less stained with the brown hydrous oxide of iron.



609 CH'EN-LUNG (1736-1795) ARTIST'S BRUSH-HOLDER (*Pi Tung*)

CHINA

Dimensions: 5.28 × 4.72 inches. 13.4 × 12.0 centimetres. Weight: 2 pounds 15.866 ounces. 1357.000 grammes  
 Specific gravity: 2.9567; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint



A vase of the usual cylindrical form of the writer's receptacle for brushes. It is hollowed at the base so as to form a circular rim, from which project five low broad feet, engraved outside with scroll designs. The upper rim is decorated at the top with a circle of bats alternating with clouds, carved in slight relief, with five bats flying round, emblems of as many forms of happiness.

The surface of the cylinder is deeply carved to represent a mountain landscape, with the hills covered with trees, among which the pine predominates, and streams rushing down in torrents. In one of the gullies a terrace pavilion is seen, half hidden by hills, with vases of flowers on a table within. The middle of the scene is occupied by three aged figures in Taoist dress, standing in a group on a rocky platform under the shade of a spreading pine. These are the three star-gods, Fu, Lu, and Shou, the Taoist divinities of happiness, rank, and longevity. The god of happiness has the place of honor in the middle and holds a *ju-i* sceptre; the god of rank, on his left, wears an official head-dress and holds a *ling-chih* fungus; while the deity of longevity stands on his right, leaning upon a long staff with gnarled head upon which is slung a roll, and holding a sacred peach in his right hand. On a rock in the background stands an attendant sprite bringing a bowl of flowers, and in the valleys behind we see a couple of spotted deer, the doe lying down, and a pair of storks, one of the pair flying down through the air.

This is a beautiful piece, on account of the remarkable purity of the material and color, and the exquisite lapidary work on it, the innermost nook of the sculptured scene being as highly polished as the surface. When a strong light is allowed to pass through it the beauty of the scene is greatly enhanced, and faint traces of the former crystalline structure of the rock are visible.

610 CH'EN-LUNG (1736-1795) BUDDHIST FIGURE (*Lo-han*)

CHINA

Dimensions: 4.69 × 2.94 × 2.72 inches. 11.9 × 7.5 × 6.9 centimetres.  
 Weight: 1 pound 4.674 ounces. 586.118 grammes  
 Specific gravity: 2.9589; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

Figure of an old man, cleverly carved, with intellectual wrinkled face, a shaven head, and the enlarged ear-lobes which characterize a Buddhist saint. Seated cross-legged, with the religious cloak wound round the waist and thrown over the left shoulder in traditional monkly fashion, he is represented expounding the law with the right hand extended, palm upward, holding a manuscript roll in the left hand. Intended to represent Bhadravāja, the first of the eighteen Lo-han, or Arhats, the principal disciples of Buddha, figures of

whom are usually placed on the two sides of the principal hall of a Buddhist temple in China.

The material is translucent, very compact and homogeneous, with several veins and yellow-brown markings, probably manganese. The purity of the material harmonizes well with the holiness of the saint.

611 CH'EN-LUNG (1736-1795) BUDDHIST FIGURE (*Lo-han*)

CHINA

Dimensions: 3.28 × 3.03 × 2.91 inches. 8.3 × 7.7 × 7.4 centimetres.  
 Weight: 1 pound 4.755 ounces. 588.405 grammes  
 Specific gravity: 2.9615; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint



Figure of an old man, cleverly executed, with wrinkled features, the large ear-lobes pierced for ear-rings, and the short hair, parted in the middle, arranged so as almost to conceal the monk's tonsure. Enveloped in his long robes, he is seated, cross-legged, in the act of expounding the law from a scroll

which he holds, in both hands, partially unrolled and spread out upon his knees. It is probably intended to represent Karika, one of the eighteen Lo-han, or Arhats, the principal disciples of Sākyamuni Buddha. A companion figure to that of Bhadravāja, the first of the eighteen Lo-han, represented in No. 610.

The material of the piece is compact, homogeneous, and subtranslucent, and shows in one half of the mass veinings of small subtranslucent spots of white and brown.



## 612 CHIEN-LUNG (1736-1795)

CARVED BOULDER (*Shan-tzu*)

Dimensions: 7.22 × 5.25 × 3.34 inches. 18.3 × 13.3 × 8.5 centimetres. Weight: 7 pounds 5.868 ounces. 3341.490 grammes  
 Specific gravity: 2.9525; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint and heavy cloudings of variegated dead-oak-leaf



An oval water-worn boulder with one end cut off so that it may stand upright, deeply carved on both sides with mountain landscapes. Part of the original weather-worn oxidized surface is left untouched, being stained with irregular reddish-brown blotches, which surround the carved scenes and give a natural air to the whole as representing a hilly mass.

The gorges above are clad with pine trees enveloped in clouds, and the rivers below, falling in torrents down the hillside, are fringed with poplars. A single figure of a man stands in the foreground, with a straw hat on his head and a short whip in his hand, in front of a horse. Four other horses are seen disporting themselves on the rocks in different natural attitudes, one of them rolling on the ground with heels in the air. On the other side of the boulder are three horses upon a platform of rock, executed in the same high relief.

The horses are intended to represent the team of eight famous coursers (*pa chien ma*) of the ancient Emperor Mu Wang, who is supposed to have reigned B. C. 1001-947, let loose upon the hillside after one of his journeys, under the charge of the charioteer Tsao Fu. This is a favorite subject in Chinese art, and even the names of the horses have been handed down. The reign of Mu Wang is celebrated through traditions which relate incidents of his intercourse with the West, and the vast journeys undertaken by the adventurous monarch, whose eight famous horses were driven "wherever wheel ruts ran and the hoofs of horses had trodden." It is related that in the seventeenth year of his reign he headed an expedition to Mount K'un Lun and visited the divinity Hsi Wang Mu, and Taoist books give a wonderful description of the revels with which he was entertained by the Queen of the Genii. The Chinese consider jade, the special product of the K'un Lun Mountains, a peculiarly appropriate material for a picture of their scenery, and appreciate the weather-worn aspect of the boulder as giving an air of antiquity to the scene.

The material of the boulder is translucent, compact and homogeneous, with numerous markings of a rich russet-brown, evidently due to hydrous oxide of iron, which stains the surface and penetrates the flaws and veins, showing the weathered and water-worn boulder character of the piece.

## 613 CHIEN-LUNG (1736-1795)

VASE (*P'ing*)

CHINA

Dimensions: 6.59 × 3.53 × 1.62 inches. 16.7 × 9.0 × 4.1 centimetres.  
 Weight: 1 pound 1.357 ounces. 492.086 grammes  
 Specific gravity: 2.9602; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A vase of flattened oval form, with a short neck from which two handles, carved in the shape of elephants' heads, stand out at the sides, and a cover surmounted by a hollow knob. It is decorated with lotus plants springing from waves, which surround the base of the vase and are also engraved beneath its foot. The leaves and flowers, mingled with reeds, are carved in strong relief over the surface of the vase. A pair of swallows is seen flying above, executed in the same bold relief.

The material is translucent, very compact and homogeneous, and by reflected light shows hardly any inclusions. The texture is very sinewy.



## 614

DOUBLE-CYLINDER VASE (*Shuang Kuan P'ing*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 7.38 × 3.62 × 2.44 inches. 18.7 × 9.2 × 6.2 centimetres.  
 Weight: 1 pound 14.877 ounces. 875.379 grammes  
 Specific gravity: 2.9483; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint



A vase composed of two graceful parallel cylinders connected at three points: at the base by a crouching four-footed and bearded monster, with flame-like appendages in front, developed into well-marked wings like those of a bat, and showing traces of flames on the body; in the middle by an eagle-like bird with outstretched wings, standing erect upon the head of the quadruped; and at the top by a ball—the precious jewel. The cylinders are undecorated except by borders of geometrical fret which encircle the base and mouth, and by the bands formed in front by the wings of the bird and the quadruped, and show the beautifully pure and even color and the exceptionally clear quality and translucency of the material.

At the back the cylinders are united by scroll handles bound together by a double band and surmounted by the head of a dragon. The projecting tail of the bird is minutely carved in the form of feathers. The vaulted double covers, which are of one piece and are surrounded by a band of floral ornament, are united at the rim by a precious jewel and on top by an arched handle of elaborate scroll design crowned with a square knob.



There is in the Collection another twin-cylinder vase of similar form and design, differing only in size and color and in the details of the decoration (No. 370).

These twin-cylinder vases are usually classed as honorific, and are supposed to have been presented to successful military commanders by the emperor as an honorary reward for their services. The name by which they are commonly known is *ying-hsiung tung*, or "champion cylinders." They were formerly cast in bronze of large size

and were intended to hold arrows. In the Bishop Collection of Bronzes there is one (fifteen inches in height) which is referred to the thirteenth century, and is described as "a double cylinder grouped with a tiger, an eagle, and a dragon, emblems of the power and strength of the earth, the air, and the sky."

The material of the vase is translucent, compact and homogeneous, exhibiting in its structure only a few very slight marks on one side.

## 615 CHIEN-LUNG (1736-1795)

MINIATURE VASE (*Hsiao Tsun*)

CHINA

Dimensions: 1.66 × 3.28 inches. 4.2 × 8.3 centimetres. Weight: 3.976 ounces. 112.740 grammes  
Specific gravity: 2.9827; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint and a few russet stainings

A little vase, with depressed globular body, decorated round the base with a foliated border in relief, a flat foot carved in the form of a flower with five petals recurved at the tips and a cross-hatched centre, and neck flaring horizontally to a wide foliated rim carved above in irregular fluting so as to simulate the top of a flower.

This small vase, carved in what the Chinese call the Indian style (*Hsi Fan Tso*), is said to be designed to be carried in the sleeve and used as a kind of pocket spittoon.

The material of which it is made is translucent, and both homogeneous and compact, with a number of veins of russet-brown, due probably to brown hydrous oxide of iron.

## 616

TAOIST FIGURE (*Shên Hsien*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 6.09 × 2.66 × 1.66 inches. 15.5 × 6.7 × 4.2 centimetres.  
Weight: 1 pound 2.082 ounces. 512.622 grammes  
Specific gravity: 2.9523; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

Figure of an old man with lofty forehead, the hair bound round with a cloth, and long moustaches mingling with a flowing beard. Dressed in a long robe tied with a girdle, with loose, wide sleeves, he holds up in his right hand a fruit, the Buddha's-hand citron; in his left, the cup which contains the *elixir vitae*, the draught of immortality. Intended to represent one of the Wu Lao, the "Five Old Ones" of Taoist mythology, whose spirits animate the five planets.

According to the chronicle of the "Bamboo Books," they appeared on earth in the days of the ancient king Yao (2357-2258 B.C.), walking among the islets of the Yellow River. They are also said in another work to have reappeared in the tenth year of Shun (Yao's successor), whom they aided with their counsels until he abdicated in favor of the great Yü (who, after many years' labor, succeeded in controlling the waters of the great deluge which had devastated the empire in Yao's time), when they disappeared. Shun thereupon erected a temple to the Five Planets, in which he offered sacrifices to them, and on the same night five "long stars," with other auspicious signs, appeared in the heavens. The Wu Lao are still sacrificed to.

The material of the piece is translucent and compact, with veinings of a subtranslucent white, grayish, and faint brownish character.



## 617

CHIEN-LUNG (1736-1795)

OVAL SCREEN (*Ch'a P'ing*)

CHINA

Dimensions: 8.34 × 5.03 × 1.22 inches. 21.2 × 12.8 × 3.1 centimetres. Weight: 2 pounds 9.845 ounces. 1186.299 grammes  
Specific gravity: 2.9544—base, 2.9376; hardness: 6.5. *Nephrite*  
Color: White with greenish tint

An oval plaque carved in deep relief on both sides with rocky scenes filled in with pines and sal trees, having the sea washing up in curl-

ing waves below, and clouds rolling across above. Grouped upon the rocks, or crossing the sea in miraculous fashion, are figures of the





618

SMALL QUADRANGULAR VASE (*Fei-chi P'ing*)

CHINA

CH'EN-LUNG (1736-1795)

Dimensions: 5.88 × 2.19 × 1.38 inches. 14.9 × 5.5 × 3.5 centimetres. Weight: 11.597 ounces. 328.791 grammes  
Specific gravity: 2.9513; hardness: 6.5. *Nephrite*  
Color: White with light greenish tint

A finely finished little vase and cover, of quadrangular section, with low foot, bulging body, and tapering neck slightly expanded above, modelled in form and design after an ancient sacrificial wine-vessel. The body is ornamented in relief with the features of the gluttonous ogre, terminating above in two dragons' heads, the reserves being filled with a rectangular-fret ground. The neck is surrounded with scrolls and a formal band of foliated pattern, and there are fret borders round the rims of the mouth and foot. It has two handles in openwork in the form of dragons. The cover, similarly ornamented with fret border and conventional dragons, is surmounted by an oblong hollow knob. The body has, moreover, in relief eight longitudinal projecting ridges cut into square dentations delicately carved with a diapered design.

There is something about the texture, the polish, and the perfection of finish of this little piece which can be characterized by only one word—"lovely." The material is translucent and compact, and shows, when a strong light is allowed to pass through the piece, a sinewy structure and faint opalescence on the thinner edges.

A chemical analysis, with reduction by Clarke, gave the following results:

		Jadeite ?	Ægirite	Nephrite
Silica . . . . .	57.28	3.43	.84	53.01
Alumina . . . . .	1.46	1.46		
Ferrie oxide . . . . .	.56		.56	
Ferrous oxide . . . . .	1.19			1.19
Manganous oxide . . . . .	.28			.28
Magnesia . . . . .	20.88			20.88
Lime . . . . .	13.15			13.15
Soda . . . . .	2.61	.88	.22	1.51
Potash . . . . .	1.23			1.23
Water . . . . .	1.79			1.23
	100.43	5.77	1.62	92.48

Abstract	
Nephrite . . . . .	92.48
Jadeite . . . . .	5.77
Ægirite . . . . .	1.62
Excess water . . . . .	.56
	100.43

Here the excess of alkalis replaces magnesia in the nephrite.





619

DRAGON WITH YOUNG (*Ch'ih Lung Hsün Tzū*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 2.81 × 4.38 × 2.94 inches. 7.2 × 11.1 × 7.5 centimetres. Weight: 1 pound 7.478 ounces. 665.591 grammes  
 Specific gravity: 2.9518; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A carving of the dragon called in Chinese *ch'ih*, the dragon of old bronzes, so often represented on the covers and handles of vases. It has one horn, growing from the middle of the forehead, of peculiar scroll-like form, recurved claws, and a forked tail ending in tubercles, with a body resembling that of a lion. It carries in its mouth a branch of flowers with leaves resembling those of the peony. One of the blossoms has its centre engraved with the round form of the character *shou* (longevity), and two bats, emblems of happiness, are clinging to the floral spray. A young dragon of similar form is lying down beside the old one. The details are well carved in bold relief with openwork. It is said to have come from the palace of the Emperor of Annam.

This is the figure that is always called *kylin* in foreign descriptions of Chinese works of art. The *k'ilin*, or *ch'ilin* as it is in the court dialect, is quite a different animal, its only resemblance being the possession of a similar unicorn head. This is described among the mythological animals as a composite form, having the head of the unicorn dragon, with the body and hoofs of a deer, and the tail of an ox, the shoulders being adorned with the flame-like attributes of a supernatural animal. The *ch'ilin* is reputed to be the noblest form of the brute creation, an emblem of perfect good, appearing only as a happy portent of good government on the birth of a virtuous sovereign. It is said to tread so lightly as to leave no footsteps, and not to harm a blade of grass nor crush the smallest insect.



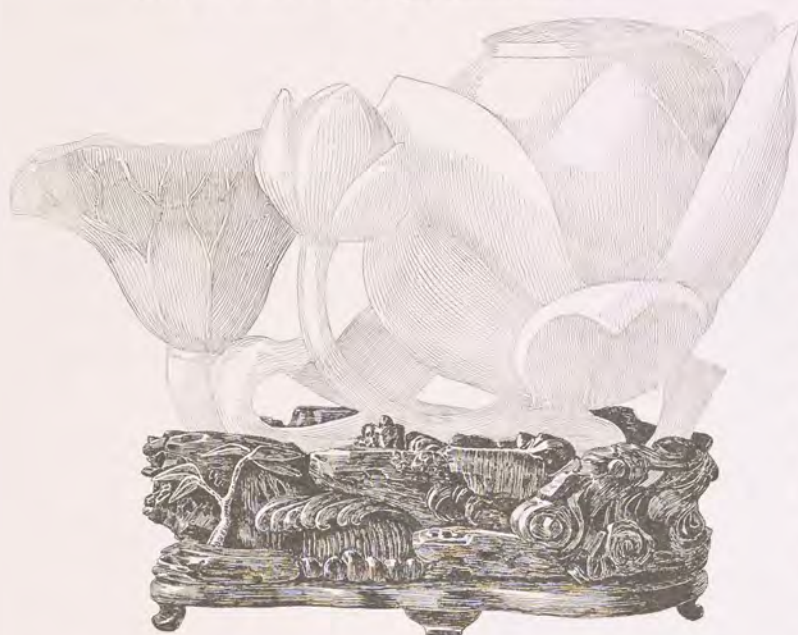
620

CHIEN-LUNG (1736-1795)

WATER-RECEPTACLE (*Shui Ch'êng*)

CHINA

Dimensions: 4.09 × 6.72 × 2.19 inches. 10.4 × 17.0 × 5.5 centimetres. Weight: 1 pound 3.763 ounces. 560.291 grammes  
 Specific gravity: 2.9685; hardness: 6.5. *Nephrite*  
 Color: White with greenish tint



A water-receptacle modelled in the form of a lotus plant. The fruit, surrounded by the petals carved in relief, is hollowed out in the middle to form a receptacle for water, for which the top of the capsule makes a movable cover. A bud lifts up its head at the side, as well as a peltate leaf which is compressed and folded horizontally at the margin so as to make a little vase to hold a flower. The broad base of support is formed of convoluted stems of the lotus. It is all carved in openwork in exact imitation of the natural forms. Seven seeds are visible on the lid of the capsule, suggesting to a Chinaman the idea of children as the result of a happy conjugal union. The design is known by the name of *Ho lien chien tzū*. *Ho lien* means "conjugal union" as well as "lotus"; *tzū*, "children" as well as "seeds"; and *chien* is "seen"; so this would read either: "Seeds seen upon a lotus"; or: "Children seen from a conjugal union." The perfect family is generally considered to include seven children—five sons and two daughters.

This piece is a companion to that described under No. 621.

The material is translucent, very compact and homogeneous, with the exception of one brown vein between the body of the vase and the flower. By transmitted light it shows a very sinewy structure and a faint opalescence. When a strong light is allowed to pass through the piece it is seen to contain an included very finely mottled mineral, a shade darker than the mass, which is probably only another form of nephrite.



621

VASE WITH COVER (*Kai P'ing*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 7.25 × 7.59 × 1.5 inches. 18.4 × 19.3 × 3.8 centimetres.  
 Weight: 1 pound 13.510 ounces. 836.618 grammes  
 Specific gravity: 2.9580; hardness: 6.5. *Nephrite*  
 Color: White with greenish tint

A vase with smooth surface, of flattened cylindrical form and oval section, with neck of similar outline, which has two scroll, quill-like handles, and a cover surmounted by an im-



perial two-horned dragon coiled around a jewel emitting effulgent rays, all carved in relief with openwork. The vase stands in water, represented by spirally engraved lines underneath and rising in waves curling all round its base. A lotus plant is growing from the water beside the vase, surrounding it with its flowers and foliage, intermingled with convoluted reeds springing from the same point. One of the large peltate leaves, standing up with folded compressed margin, makes a natural receptacle for a flower, and a fruit capsule just

above, encircled by rings of petals, is hollowed out into a tiny cup. The rest of the foliage of the lotus, with a freshly opened flower and a bud upon separate stalks, are all carved in naturalistic details in very strong relief with openwork.

It is a companion piece to that described under No. 620.

The material is translucent and very compact, with scarcely any inclusions or marks, except four brownish spots on the stems of the plant.

## 622 CH'EN-LUNG (1736-1795)

BUDDHIST BOWL (*Po*)

CHINA

Dimensions: 2.72 × 5.62 inches. 6.9 × 14.3 centimetres.  
Specific gravity: 2.9554; hardness: 6.5. *Nephrite*  
Color: White with greenish tint

Weight: 1 pound 8.280 ounces. 688.358 grammes

丰乾  
製隆

A rounded, flattened bowl, with rim curving inward toward the circular mouth, modelled in the form of the alms-bowl of the Buddhist mendicant, called *po*, a contraction of the Sanskrit *patra*. Round the circumference of the bowl stand out in relief nine Buddhist figures of identical form and design, executed in Indian style, representing the nine forms of Amitābha Buddha. Each figure is seated cross-legged upon a lotus dais, with a nimbus around the head and a shield-like background engraved with wavy lines. The dress is arranged in traditional fashion so as to leave the right shoulder bare, and the religious cassock, or *kashāya*, hangs in loose folds around the figure. A hat with upturned seven-lobed brim and jewelled summit, and a pair

of round ear-rings, complete the costume. The bare feet have the soles turned upward, and the folded hands hold a model of the *dāgoba* or *stūpa*, the mausoleum which encloses the funeral relics of the Buddha. Engraved underneath with four Chinese characters in antique script: *Ch'ien-lung nien chih*; i. e., "Made in the reign of Ch'ien-lung" (1736-1795).

The particular interest of this piece lies in the character of the cutting, which is Indian rather than Chinese. The material is translucent, compact and very homogeneous. In the base of the bowl is a darker, less translucent vein. In the thin parts the sinewy texture and a slight opalescence are seen.

The fabulous Amitābha, the Buddha of "boundless age," the sovereign ruler of Sukhāvati, the Paradise of the Western Heaven, is peculiar to northern Buddhism, being unknown to the southern Buddhists of Siam, Burma, and Ceylon. His worship was started in China during the Chin dynasty in the fourth century, and he is at the present day by far the most popular deity in China as well as in Tibet and Mongolia, and his name is invoked much more frequently than that of the historic Buddha, Sākyamuni. The idea of a paradise of bliss seems to be more attractive to the common mind than the abstruse dogma of Nirvāna. The nine forms of this Buddha are sometimes distinguished by a different position of the fingers as the hand is held up in the act of preaching. The style of the carving is that used in the Lama temples, which are specially patronized by the present dynasty of China, the Emperor Ch'ien-lung having been especially an ardent devotee of this form of Buddhism, which has its spiritual head in the Grand Lama of Tibet.

## 623

ARTIST'S BRUSH-HOLDER (*Pi Tung*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 6.03 × 6.78 inches. 15.3 × 17.2 centimetres.

Weight: 5 pounds 2.140 ounces. 2328.640 grammes

Specific gravity: 2.9389; hardness: 6.5. *Nephrite*

Color: White with greenish tint

A large cylindrical vase, with a smooth base mounted on five low scrolled feet, and a broad upper rim slightly rounded, intended to be used as an artist's brush-holder. The surface is decorated with a mountain scene carved in relief, the sides of the hills being clad with pines, dryandra, and poplar trees. To the right runs a river with a rapid, whirling stream, on the rocky bank of which is built a pillared pavilion with a double curved roof, standing on a terrace supported by piles over the water. Upon the veranda is seated a man in scholar's dress, of venerable aspect, with arms folded in his sleeves, gazing on the surrounding scene. This is the famous poet of the eighth century, Li Tai-po, composing his verses, as he was wont to do when inspired by the beauties of nature. On the bank of the river below a boy is seated, with an ink-slab in his left hand and a







No. 622

BUDDHIST BOWL

(Po)

Ch'ien-lung (1736-95)

Nephrite











little brush in his right—he is washing the poet's pallet in the stream. In the background, at the foot of a staircase cut into the rock, a second boy is crouching before a portable tripod stove, vigorously fanning the blaze with a round palm-leaf fan to heat the tea-pot placed upon the top. The charcoal-basket and tongs are seen on the rock beside him. A stork is seen flying overhead, and the boy has turned his head to look up at it.

It is an illustration of the well-known couplet of the poet:

"Hsi yen yü t'un mo  
P'êng ch'a ho pi yen."

("As the pallet is washed, the fish swallow the ink;  
When the tea is boiled, the cranes dodge the smoke.")

The cylinder contains two large brushes set in cup-shaped sockets of green jade, mounted on long round handles of white jade, deeply carved with a dragon in the midst of clouds rising from sea waves, with a tuberculated band above, ornamental scroll borders, and the *yin* and *yang* symbol at the base, which is perforated for the insertion of a silk tassel. Next, a ju-i sceptre fashioned out of red

coral in the shape of a polyporus fungus (*ling-chih*), twin stems of which form the handle, with two bats attached, and the round character *shou*, "longevity," cut in relief upon it, while the head is that of the fungus and decorated in relief with the swastika emblem, surrounded by a circle of five bats, symbolizing the wish: *Wu fu wan shou*, "The five happinesses and a longevity of ten thousand years!" Lastly, a scroll picture of a landscape painted on silk to commemorate the appearance of a magic fungus upon a tree within the courtyard of a temple. It is labelled outside: *Ching chih hsüan ti erh t'ou*, "Second view of the pavilion where the magic fungus was admired."

This is a very large piece of remarkable purity, translucent, compact and very homogeneous. When a strong light is allowed to pass through it a slightly darker vein, running transversely across the base, is perceptible. The handles of the brushes show a grayish inclusion probably stained by manganese, and the sockets contain black metallic inclusions which are probably chromic iron.

The design selected by the artist leaves large areas unsculptured, his intention probably being to show the beautiful quality of the material, its purity and polish requiring no added decoration to enhance its value or its beauty.

624

QUADRANGULAR VASE (*Fang P'ing*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 7.5 × 3.75 × 1.66 inches. 19.0 × 9.5 × 4.2 centimetres.

Weight: 15.717 ounces. 447.020 grammes

Specific gravity: 2.9520; hardness: 6.5. *Nephrite*

Color: White with light greenish tint

Vase of quadrangular form, with the body, of square outline and flattened section, slightly swelling upward toward the shoulder, where it is drawn in to a short neck bulging somewhat at the rim and having openwork scroll handles at the sides. The foot, narrower than the neck, encircled by a prominent band near the top, spreads slightly toward the base. The cover, of high vaulted shape, is surmounted by an oval button composed of leaf-rolls cut in openwork. The body is filled with a most elegant floral design composed of leafy scrolls and highly conventionalized flowers, forming regular patterns, alike on the two sides, which are sharply cut so as to stand out in firm relief. The sides of the vase are decorated in relief with similar leaf and scroll ornamental designs starting from the openwork handles, each of which consists of a flower enveloped in leafy scrolls, which curl up below at the tips. The neck and foot are surrounded by bands of ornament resembling the Greek palmetto. The cover is decorated with conventional flowers and leaves like those on the body.

This vase is a typical example, in its floral scroll decoration, of what the Chinese call the "Indian style" (*Hsi Fan Tso*), which seems to have been introduced into China early in the reign of Ch'ien-lung, or about the middle of the eighteenth century, after the Chinese conquest of Eastern Turkistan had opened the land route and they found, to their surprise, as may be seen in contemporary literature, that jade was also carved at Lahore. It is sometimes difficult to distinguish Chinese reproductions of original Indian work; but usually, as in this piece, the comparative heaviness of the form, or some detail in the decoration, will show the Chinese hand.

The material of this piece is translucent, homogeneous and compact. When a strong light is allowed to pass through it, yellow-green horizontal markings are shown to exist in several parts of the base, and in the thinner parts of the cover the sinewy texture is well shown, as well as a faint opalescent reflection.



625

CH'EN-LUNG (1736-1795)

TAOIST DIVINITY (*Hsi Wang Mu*)

CHINA

Dimensions: 3.44 × 7.97 × 2.25 inches. 8.7 × 20.2 × 5.7 centimetres. Weight: 1 pound 6.962 ounces. 650.982 grammes

Specific gravity: 2.9596; hardness: 6.5. *Nephrite*

Color: White with greenish tint

A raft hollowed out of the trunk of an ancient pine, floating over the waves of the sea, which are carved in relief beneath and curl up all

round. From one of the corners of this square, flat-bottomed boat sprouts a growing branch, spreading above so as to overshadow the





figure seated below. This figure, dressed in ordinary costume, with a scarf floating loosely over the shoulders, carries a large peach in her hands, and represents the Taoist divinity Hsi Wang Mu, the Queen of the Genii, bringing the fruit of the sacred tree which grows near her palace in the far West, to bestow with it the gift of immortality upon some favored mortal. At the other end is seated a female attendant paddling the raft, in the middle of which is placed a large basket filled with blossoming sprays of the tree-peony. A deer stands in the bottom of the boat and a crane is lying down as if asleep behind the goddess, both sacred animals as types of longevity.

The design is unique; the material is translucent and compact, with a grayish, almost black, inclusion on the top of the tree. When a strong light is allowed to pass through the piece, the thinner parts show the sinewy character of the structure and a faint opalescence.

626

## JADE FRAME WITH MIRROR

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 5.56 × 5.25 × .62 inches.  
14.1 × 13.3 × 1.6 centimetres.  
Weight: 14.880 ounces. 421.855 grammes  
Hardness: 6.5. *Nephrite*  
Color: White with greenish tint

A frame, in one piece, in which is set a mirror over which slides a jade cover with a trefoil handle. Upon the back and cover are two panels with identical designs, consisting of a phoenix with outstretched wings flying in clouds, and a flower at each corner, all in slight relief. On the bevelled edges of the frame are a few lightly etched foliations and scrolls. The polish and carving are good, and the piece may well have formed part of the Summer Palace collection before its destruction by the Anglo-French troops in 1860.



627

CH'EN-LUNG (1736-1795)

INCENSE-BURNER (*Hsiang Lu*)

CHINA

Dimensions: 4.88 × 7.53 × 3.84 inches. 12.4 × 19.1 × 9.7 centimetres. Weight: 1 pound 13.145 ounces. 826.260 grammes  
Specific gravity: 2.9609; hardness: 6.5. *Nephrite*  
Color: Light greenish-gray

A vessel, intended for burning incense, of most complicated form and design. Of broad oval form, contracted in the middle and deeply hollowed out inside, it is composed apparently of two heart-shaped bowls, placed base to base, the rim recurved and joined by a double scroll, so as to communicate by a broad channel. The lobed foliated outline of the rim exhibits the conventional design of a double polyporus fungus (*ling-chih*), this being the motive of the form. The bowl stands upon a high pedestal, carved in the same piece of jade in the form of a wooden stand or oval foliated base, with four solid curved legs springing from it, which support the upper table on which the vessel rests. The junction of the two is concealed by a large peony blossom in front and behind, the two flowers executed in bold relief and openwork, with large scrolled leaves proceeding from them in all directions, curving upward to support the vase, downward to join the base of the pedestal, and outward till the tips of the leaves join on either side. The outside of the bowl is decorated with the musical stone, engraved with a fillet on the scrolled middle above the flowers in front and behind, and the eight Buddhist emblems in relief, also provided with fillet, occupy the lobed outline of the two sides.

The form of this piece is very charming. The material is translucent, homogeneous and compact, with several transverse veinings at the foot.

The eight Buddhist emblems of good augury, known as *pa chi-hsiang* (*pa* meaning "eight"; *chi-hsiang*, "happy omens"), so often met with in the decoration of jade, have been figured on this piece and may be enumerated here. They comprise:

- 1 *lan*, the wheel of the law. This is generally enveloped in an aureole of flames. It is the *chakra*, or sacred wheel of the law, the symbol of the *chakravarti*, or universal monarch. It is sometimes replaced by the bell (*chung*), a figure of the large hanging bell, called *ganta*, which is struck on the outer rim with a wooden mallet during Buddhist worship.
- 2 *lo*, the univalve shell, the *sankha* or conch-shell, blown at certain religious ceremonies.
- 3 *san*, the state umbrella, held throughout the East over the heads of personages of rank.
- 4 *kai*, the canopy. Used like the preceding.







No. 628

**SCREEN**

*(Ch'a P'ing)*

Ch'ien-lung (1736-95)

Nephrite











- 5 *hua*, the flower. Properly the sacred lotus, or *padma*, a pink-colored variety of *Nelumbium speciosum*, but often, as here, replaced by a peony, or perhaps by some other flower.
- 6 *p'ing*, the vase. The precious vase, sometimes, as in this case, containing a berried plant and a branched fungus, but usually covered with a peltate lotus leaf.
- 7 *yü*, the pair of fishes. An emblem of fertility. Usually the carp or perch is represented, but we have here a couple of *nien yü*, the bull's-head fish, a kind of *Pimelodus*, common at Peking.
- 8 The knot called *chang*, which means "intestines," a name dating doubtless from the time when it was a usual practice to cut open the abdomen of the sacrificial victim and draw a divination from the intestinal folds or convolutions. It is now a symbol of longevity, as being a line without beginning or end.

The additional symbol here is a figure representing the carved musical stone of jade called *ch'ing*, which, having the same sound as *ch'ing*, "fortunate," is often used to convey the idea of good fortune. It is one of the eight typical musical instruments, which are also used as decorative symbols. These are made of eight different materials as follows:

- 1 *ch'ing*, the musical stone.
- 2 *chung*, the metal bell.
- 3 *ch'in*, the lute with strings of silk.
- 4 *ti*, the bamboo flute.
- 5 *chu*, the wooden box.
- 6 *ku*, the drum covered with skin.
- 7 *shêng*, the reed-organ with a gourd body.
- 8 *hsüan*, the ocarina of baked earthenware.<sup>1</sup>



## 628 CH'EN-LUNG (1736-1795)

SMALL SCREEN (*Ch'a P'ing*)

CHINA

Dimensions: 9.34 × 7.5 inches. 23.7 × 19.0 centimetres. Weight: 1 pound 15.509 ounces. 893.287 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Light gray with cloudings of darker gray

A rectangular plaque, most elaborately and minutely carved throughout in openwork. From rocks at the base spring an intricate mass of foliage, the leaves interlacing and surrounding five large flowers, apparently peonies, set in the centre and at the four corners of the field. In the midst of the foliage wind two dragons in pursuit of the precious jewel, which is emitting its effulgent rays midway between them.

Mounted in a rosewood frame, with a plaque of cloisonné enamel of the Ch'ien-lung period, of the same size as the jade, at the back.

This is a wonderfully beautiful example of Chinese lapidary work. Though originally only seven millimetres in thickness, by the different

processes of cutting, undercutting, and hollowing each object represented has been reduced almost to the thinness of tissue-paper. Even the bodies of the dragons, with their scales in relief, have been reduced in such a way that an appearance of equal translucency throughout has been produced. In this respect it is one of the gems of the Collection.

The material is translucent, homogeneous and very compact, with inclusions of a very minute black metallic substance, apparently chromic iron, prevalent enough to impart a faint grayish tint to the very sinewy material.

## 629 CH'EN-LUNG (1736-1795)

CUP AND COVER (*Kai Wan*)

CHINA

Dimensions: 3.28 × 4.97 inches. 8.3 × 12.6 centimetres. Weight: 6.267 ounces. 177.720 grammes  
 Specific gravity: 2.9518; hardness: 6.5. *Nephrite*  
 Color: Opalescent light gray

A cup of Chinese form, with a large foot, low rounded body, and a slightly everted rim. The saucer-shaped cover fits upon it within the rim. Both are delicately carved and polished to an egg-shell lightness, and modelled after the conventional chrysanthemum pattern. Both the cup and the cover are cut into seventy-two flutings so that the two rims coincide, the foliated ends of the flutings of the saucer-shaped cover fitting into the flutings of the cup. The bottoms of the cup and of the cover are encircled with two rings of florets surrounding the middle, which is engraved with cross-lines. The foot is also fashioned in the shape of a chrysanthemum reversed, with its two

circles of florets surrounding a cross-hatched middle. The cover is surmounted by a ringed handle, ornamented with fluting and bending over outside so as to leave a free border overhanging the cover.

Both pieces are remarkably sonorous and both emit the same note when struck, and the translucency of the material almost passes into transparency. When a strong light is allowed to pass through it a mottled structure is shown, suggesting in part a former crystalline structure. Minute grayish subtranslucent inclusions, probably another form of nephrite, are also seen.

<sup>1</sup> See "Chinese Music," by J. A. Van Aalst.



630

CHIEN-LUNG (1736-1795)

SMALL ROUND DISH (*P'an-tzu*)

CHINA

Dimensions: .97 × 5.25 inches. 2.4 × 13.3 centimetres. Weight: 3.854 ounces. 109.260 grammes  
Specific gravity: 2.9564; hardness: 6.5. *Nephrite*  
Color: White with light cream-tint

A small but plain saucer-shaped dish of egg-shell thinness, with slightly expanded rim and no foot, the latter having been removed for chemical analysis and microscopic examination.

The material is translucent, homogeneous and compact, and when a strong light is allowed to pass through it exhibits a fine camphor-like and apparently crystalline structure probably due to traces of the former jadeite. This observation is borne out by the examination of thin sections in the microscope. Iddings found a once coarse-grained aggregate of pyroxene crystals perfectly mapped out by patches of similarly oriented amphibole fibres arranged in a direction corresponding to the twinned positions of the pyroxene lamellæ.

Clarke's reduction of Walden's analysis is here given:

	NaAlSi <sub>3</sub> O <sub>8</sub>	Al <sub>2</sub> CaSiO <sub>6</sub>	Nephrite	
Silica . . . . .	56.83	8.71	1.11	47.01
Alumina . . . . .	5.33	3.70	1.63	
Ferric oxide . . . . .	.46		.46	
Magnesia . . . . .	19.38			19.38
Lime . . . . .	13.11		1.03	12.08
Soda . . . . .	2.25	2.25		
Water . . . . .	3.44			1.50
	100.80	14.66	4.23	79.97

Abstract	
Nephrite . . . . .	79.97
NaAlSi <sub>3</sub> O <sub>8</sub> . . . . .	14.66
Al <sub>2</sub> CaSiO <sub>6</sub> . . . . .	4.23
Excess water . . . . .	1.94
	100.80

631  
632

CHIEN-LUNG (1736-1795)

TWO CUPS AND COVER (*Kai Wan*)

CHINA

Dimensions: 631=2.25 × 5.0 inches. 5.7 × 12.7 centimetres. Weight: 2.848 ounces. 80.750 grammes  
632=3.34 × 5.0 inches. 8.5 × 12.7 centimetres. 4.989 ounces. 141.463 grammes  
Specific gravity: 631=2.9668; hardness: 6.5. *Nephrite*  
632=2.9652; 6.5. *Nephrite*  
Color: White with faint greenish-gray tint

A pair of cups (one with cover), of egg-shell thinness and elegant form, with flaring mouth and a decoration of conventional chrysanthemum pattern, carved in vertical flutings in two encircling bands as if to represent two rings of florets; a third band is represented in the bottom surrounding the cross-hatched round space in the middle. The foot is a reversed floral design, with two rings of flutings surrounding the circular cross-hatching in the middle.

The cover has the same design of fifty vertical flutings in a double ring, and the handle, which is cross-hatched in the middle, is composed of two rings of short florets, which stand nearly upright. The bottom of the cover inside is not fluted—only engraved with cross-lines as on the top.

The cutting on these pieces is marvellous when one considers their thinness. They are said to be East Indian, and they certainly are so in design, but the form is Chinese. It is probable that they were made in China in imitation of the Indian style. They formed part of the loot of the Summer Palace in 1860.

The material is translucent, very compact, and somewhat sinewy in texture. By transmitted light it shows an apparent ruin-agate effect, as if the substance had undergone alteration, but still retained part of the structure of the original jadeite.



633

CHIEN-LUNG (1736-1795)

TRIPOD INCENSE-BURNER (*Ting Lu*)

CHINA

Dimensions: 3.91 × 6.31 inches. 9.9 × 16.0 centimetres.  
Weight: 1 pound .721 ounce. 473.997 grammes  
Specific gravity: 2.9771; hardness: 6.5. *Nephrite*  
Color: Very light gray with an exceedingly faint greenish tint



An incense-burner modelled in the form of the ancient bronze tripod called *ting*. It is profusely decorated with floral designs, elaborately executed and perfectly polished throughout. It rests upon three feet which are formed of peonies, and another form of the same flower stands out in relief at the point where each of the legs springs from the body. The two handles, of loop form, are carved in openwork into peony sprays which bear a leaf with recurved apex and bud below, and a full-blown blossom between two large spreading leaves above, each handle having strung upon it a movable ring covered with flowers of regular formal design. The cover is perforated above with a round hole which is surmounted by a little dome carved in openwork



with peonies and leaves, forming the lightest and most graceful handle. The bowl and cover are surrounded with borders of foliated design longitudinally fluted, and the bottom is covered with the same fluted leaves surrounding a flower, while the whole of the rest of the surface is filled with sprays of the same tree-peony

(*Peonia moutan*), exhibiting its manifold aspects as rendered by the Chinese artist.

The material of this piece is translucent, homogeneous and compact. When a strong light is allowed to pass through it a transverse veining, probably of the same mineral, is apparent.

634

CH'EN-LUNG (1736-1795)

Dimensions: 8.19 × 5.44 × 2.72 inches.  
20.8 × 13.8 × 6.9 centimetres.  
Weight: 1 pound 7.328 ounces.  
661.362 grammes

An ovoid vase, of flattened oval section, swelling upward to the shoulder, where it recedes into a gracefully curved neck and ends above in an upright rim, within which the cover fits. The vase is decorated with chrysanthemums of Chinese workmanship executed in the

Indian style. The shoulder is studded with chrysanthemum blossoms at the sides, and the rounded cover is crowned by another blossom. Two leaves project from the shoulder midway in the form of loops which are strung with movable rings. Four other rings are suspended round the neck upon sprays of the same



Specific gravity: 2.9718; hardness: 6.5.

*Nephrite*

Color: Light yellowish-gray

flower, which curve upward, carved in openwork relief with blossoms and drooping buds flanked by formal leaves. Descending foliations complete the decoration of the shoulder and an ascending ring ornaments the base. The body of the vase is encircled by a band of conventional floral design, in similarly slight relief, which is composed of sprays of the same flower.

The material is translucent, homogeneous and compact. When a strong light is allowed to pass through it, the very delicate yellowish-green color is well seen, as well as a veining containing numerous inclusions of a less translucent substance, evidently also nephrite.

CHINA

635  
636TWO PERFUME-RECEPTACLES (*Hsiang K'ou-tai*)

CH'EN-LUNG (1736-1795)

Dimensions: 2.19 × 1.78 × .69 inches. 5.5 × 4.5 × 1.7 centimetres.

Weight: 635=1.698 ounces. 47.950 grammes

636=1.642 ounces. 46.555 grammes

Hardness: 6.5. *Nephrite*

Color: Light greenish-gray

Two receptacles for perfume or fragrant flowers, of oval form delicately carved in openwork with symbols and floral scrolls, consisting of two superimposed panels. These are strung together by silk cords, and closed by coral beads, to be worn suspended from the girdle. Two exceedingly dainty pieces.

The first is of regular oval form and has the character for longevity (*shou*) in the middle, within an oval frame, surrounded by a floral scroll of interlacing peonies, containing two flying bats, emblems of happiness, and a pair of symbols composed of two "cash" strung together. This reads *Fu shou shuang ch'üan*, "Happiness and long life both complete!"—*ch'üan* meaning "complete" as well as "money."

The second is also of oval form, but constricted in the middle like a sachet tied with a string. It is carved with a floral design of chrysanthemum blossoms and leaves, interrupted by a symbol in the middle composed of two diamonds interlacing. This is called *T'ung hsin fang shêng*, "Intertwining 'stars' of victory," which can be read also, by the use of other homophonous characters, "United hearts bring success"—a marriage motto.

The material is translucent, compact and homogeneous. When a strong light is allowed to pass through it the sinewy structure of the jade and a faint opalescence are perceptible.



CHINA



## 637 CHI'EN-LUNG (1736-1795)

CEREMONIAL AXE (*Fu*)

CHINA

Dimensions: 4.97 × 3.44 × .62 inches. 12.6 × 8.7 × 1.6 centimetres. Weight: 7.177 ounces. 203.475 grammes  
 Specific gravity: 2.9771; hardness: 6.5. *Nephrite*  
 Color: Light sage-green touched with russet pear-leaf

A ceremonial axe, intended for symbolical display on the altar of a Taoist temple. The back of the blade is straight, the sides are excavated so as to spread outward toward the edge, which is broad and convex in outline. Upon the back stands the figure of a lion, and two bearded dragons of archaic design are mounting up the sides, carved in the same openwork relief as the lion. The back is engraved on both faces with a chain of rectangular fret, and an ornamental band of dotted and spiral char-



acter runs across the middle of the blade, parallel with its curved edge. The Chinese character *fu*, "happiness," is emblazoned on one face; a circular form of *shou*, "longevity," on the other.

The material is translucent, homogeneous and compact, with minute inclusions of what appears to be a brownish mineral, probably muscovite.

The brown staining seen on one end of the axe was probably in the original mass.

## 638 CHI'EN-LUNG (1736-1795)

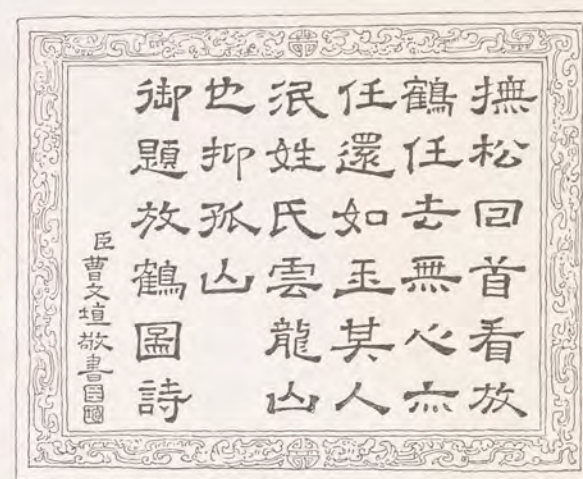
SCREEN (*Ch'a P'ing*)

CHINA

Dimensions: 5.47 × 6.69 × .41 inches. 13.9 × 17.0 × 1.0 centimetres. Weight: 1 pound 3.044 ounces. 539.908 grammes  
 Specific gravity: 2.9515; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint

A screen, of oblong form, carved in high relief with the picture of a mountain scene, with trees and water enveloped in clouds, and a plank bridge spanning the rivulet below: evidently a copy of an old picture.

In the foreground are two figures—an old man leaning on the gnarled stem of a pine, and a boy standing on the bank in front of him, pointing upward. Both are gazing at a crane wheeling around in the air above. On the reverse side of the plaque, enclosed within an ornamental border engraved with interlacing chain scrolls of conventional pattern starting from dragons' heads on each side of the round "longevity" character which occupies the middle above and below, is an inscription carved in bold characters of archaic style, and, like the border, filled in with gold. It contains a verse in rhyming stanzas, composed by the Emperor Ch'ien-lung and written by one of the high officials of his court, which reads as follows:



“Leaning upon a pine with his head turned round,  
 Watching the flight of a crane,  
 Which is soaring aimlessly across the sky,  
 To turn again in its course.  
 The man's dignified mien is worthy of the jade,  
 Yet name and family are alike forgotten:  
 Perhaps he is the hermit of the Cloudy Dragon Hills,<sup>1</sup>  
 Or maybe the dweller in the Solitary Mountain.<sup>2</sup>”

“Verses composed by the Emperor ‘On the Picture of a Crane Flying.’  
 Reverentially written by his minister Ts’ao Wên-chih,<sup>3</sup>  
 whose seals<sup>4</sup> are attached.”

This Summer Palace piece is of remarkably translucent, homogeneous and compact material, with a few vein-markings made apparent by inclusions of brownish hydrous oxide of iron; and when a strong light is allowed to pass through it, bluish markings a trifle darker than the mass are visible, as well as two inclusions, on one side, of a white opaque substance, probably also nephrite.

## 639 CHI'EN-LUNG (1736-1795)

BELL (*Chung*)

CHINA

Dimensions: 9.06 × 4.25 × 2.19 inches. 23.0 × 10.8 × 5.5 centimetres. Weight: 1 pound 12.843 ounces. 817.720 grammes  
 Specific gravity: 3.0128; hardness: 6.5. *Nephrite*  
 Color: Very light greenish-gray with spots of dead-oak-leaf

A bell, with a flattened oval section, of archaic design, modelled after an ancient bronze bell of the early dynasties. Four longitudinal

ridges project outside in vertical lines carved into foliated dentations, the two middle ridges having a round stud at the top. The rest of

<sup>1</sup> The Cloudy Dragon Hills (*Yun Lung Shan*) are in the vicinity of Su-chou Fu in the province of Kiangsu. They are celebrated as the abode of a hermit named Chang T'ien-chi, who lived during the Sung dynasty and built there a pavilion called *Fang Hsiao T'ing*, or "Flying Crane Pavilion."

<sup>2</sup> The *K'u-shan*, or "Solitary Mountain," is near the lake Hsi Hu at Hang-chou Fu in

the province of Cheh-kiang. In the Sung dynasty (960-1279 A.D.) Lin P'u, a celebrated official of high rank, used to fly cranes on this mountain.

<sup>3</sup> A famous scholar of the reign of Ch'ien-lung.

<sup>4</sup> The first seal contains the character *ch'ên* (minister), carved in intaglio; the second, *chih*, the last character of his personal name, engraved in the ordinary way.



the body is decorated with bands encircling the bell, interrupted by the vertical ridges: a band of dragons above, with rectangular scroll bodies; five bands in the middle, defined by relief lines and filled alternately with rows of studs and interrupted fret; and a broad band below, containing the conventional face of the gluttonous ogre, stretching entirely across. The rim of the bell, which curves down on either side, is surrounded by a narrow band of herring-bone fret with lightly engraved lines. The hollow handle at the top, of conical tubular shape, is vertically fluted outside. There is a border of interrupted rectangular fret round the summit, and a broad projecting band carved with conventional phenixes round the base. From this band proceed two scroll handles which are attached to the bell and carved in openwork so as to afford a means of suspension. Bells of this form are suspended to be struck near the mouth with a wooden mallet, like a gong, and are not intended to be swung, having no clapper inside.

The material is translucent, homogeneous and compact, with a broad broken veining of a darker opaque nephrite running across it, in parts stained by the brown hydrous oxide of iron, and at the upper knob of the bell there is an inclusion of an opaque yellow, apparently a spot of nephrite.

640      **FIGURE OF A BUDDHIST ARHAT (Lo-han)**  
CHIEN-LUNG (1736-1795)      CHINA

Dimensions: 7.69 × 6.78 × 2.69 inches. 19.5 × 17.2 × 6.8 centimetres.

Weight: 6 pounds 13.056 ounces. 3091.700 grammes

Specific gravity: 2.9612; hardness: 6.5. *Nephrite*

Color: Light sage-green

An irregular block of jade carved in the shape of a rocky hill hollowed out at one side into a cave. Within the cave, seated upon its stone floor with one leg crossed over the other, is the figure of an aged Buddhist saint, representing, as we gather from the imperial inscription at the side, Kanaka, the eighth of the eighteen venerable ones honored in China as the immediate disciples of Sākya-muni, the Buddha. He holds a long hermit's staff, is dressed in long robes reaching down to the feet, which are bare, and hanging in loose folds at the sleeves. With shaven head, bushy overhanging eyebrows, and characteristically pendent ear-lobes, his intelligent wrinkled face, and the hands folded together with two fingers projecting in an artificial formal fashion such as Buddhists lay such stress upon, he is figured in the act of expounding the law.

The inscription, beautifully engraved in minute characters, shows that the figure was made in the reign of Ch'ien-lung as one of a series for a shrine in the palace in connection with the "Reed and Orchid Pavilion," the name doubtless of one of the numerous buildings within the walls of Yuan Ming Yuan, the Summer Palace near Peking.

The inscription on the left of the figure is, *Ka-na-ka-sha-cha* (Chinese transliteration of the full Sanskrit name), the eighth of the "Venerable Ones." Sealed with two seals in antique script, the first referring to the subject, "Inciting to Virtue and Pure Abstinence"; the second inscribed, *Ch'ien-lung ch'ên han*, signifying, "Private Seal of the Emperor Ch'ien-lung."

The second, longer inscription, on the right, is headed by a seal enclosed within an oblong border containing three antique characters, a vertical line flanked by an imperial dragon on either side, being, *T'u Lan Shih*, "The Reed and Orchid Pavilion."<sup>1</sup> The two seals below have fanciful inscriptions, the first praising the excellences of pen and ink, the second lauding Buddhism as equal in brilliance to the sun. The inscription contains a verse in two rhyming stanzas composed by the emperor, which runs thus:

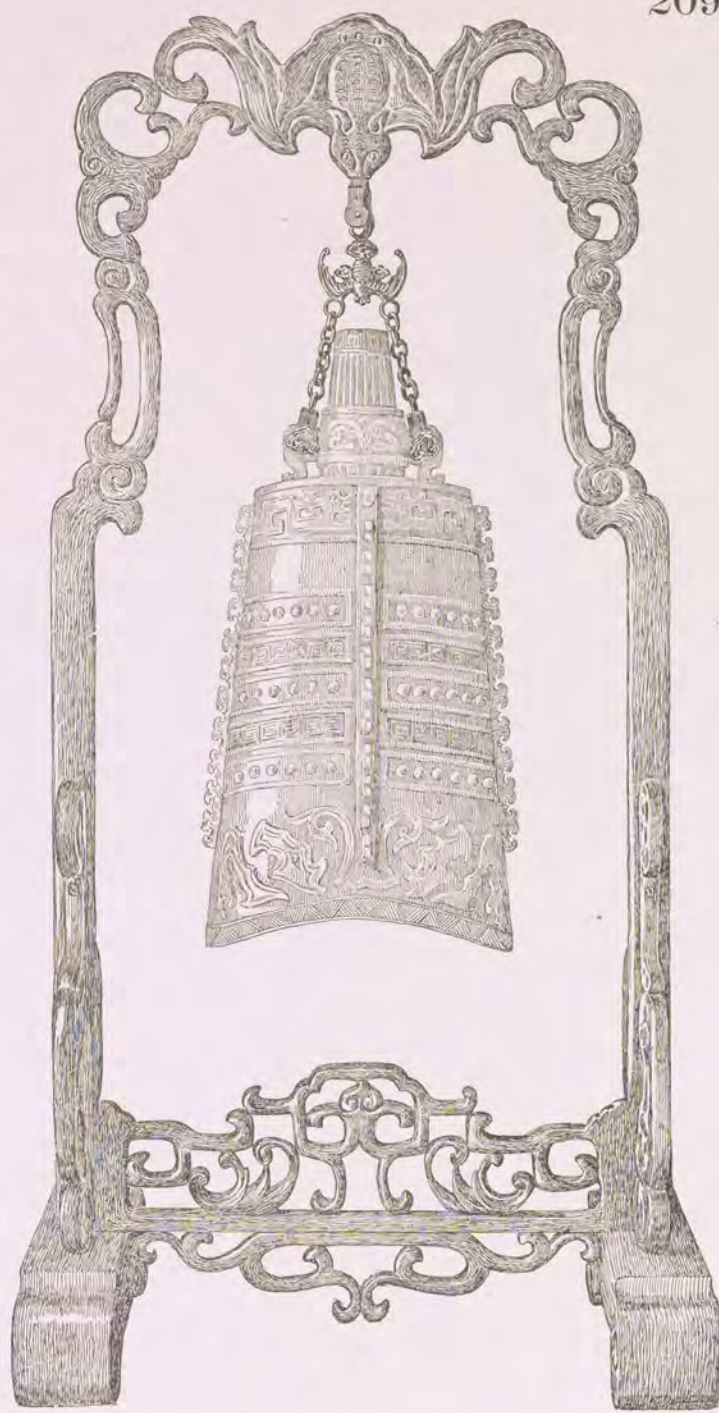
"The five feelings and six states of consciousness are but a phantasm in their varied changes:  
While this figure points his fingers immovably, so different from the swift-darting dragon of the sky,  
He dwelt among the woods and rocks till the hair grew long over his hands and feet;  
Why was it not cut off,<sup>2</sup> as we shear it from the swine and the deer?"

This is one of a series of eighteen similar figures, representing the eighteen Lo-han, in the Summer Palace at Peking, each cut in a different-colored stone—some were of jade and some were of other materials. In the Collection there is a companion piece to this figure, cut in lapis lazuli of superb quality; and other members of the series may be seen in collections in Europe, whither they were carried after the destruction of the Summer Palace in 1860.

Throughout part of this translucent, homogeneous and compact piece there is a slight veining of a trifle whiter and more opaque substance, which is apparently also nephrite.

<sup>1</sup> The different pavilions in the Summer Palace always have the name inscribed upon an oblong shield framed with dragons over the principal gateway at the entrance of each. The gardens are filled with reedy lakes and artificial rockeries covered with orchids, so that this would be an appropriate name for one of them.

<sup>2</sup> The idea would seem to be to have some to keep as a relic of the hermit saint. The Buddhists attach the greatest importance to such relics. The hair of animals is used for the brush-pencil, which the Chinese also consider sacred, so the comparison was not so grotesque to them as it appears to us at first sight.



五蓋六識真幻異同豎  
此一指非彼天龍與木  
石居士生手是何不爾  
之誰爾豈處  
第八位聖納雲刺微維  
尊者



641

DRAGON AND PHENIX VASE (*Lung Fêng P'ing*)

CHINA

CHIEN-LUNG (1736-1795)

Dimensions: 10.44 × 4.41 × 1.38 inches. 26.5 × 11.2 × 3.5 centimetres. Weight: 3 pounds 3.958 ounces. 1473.010 grammes  
 Specific gravity: 2.9604; hardness: 6.5. *Nephrite*  
 Color: Greenish-gray

A tall flat vase of complicated form and elaborate openwork design, modelled in the shape of a phenix with its tail tucked under and between its legs, standing upon a high pedestal and supporting upon its back a sacrificial pitcher, round which a dragon is coiling. The pedestal is carved in the form of a wooden stand ornamented with a rectangular open scroll. The phenix is of the usual formal design, with the flaming attributes of a supernatural nature proceeding from its throat, and stands upright, with the head turned back resting against the vase, and the wings curled up at the tips to support its base. The two-horned dragon is vigorously carved in openwork, with a few clouds attached in waving scrolls, upon the

prominent body of the vase, which has the form of an ancient bronze libation-vessel, with a smooth surface and square section, and a broad neck with a small handle of rectangular scroll design opposite the swelling square lip which projects behind. Though somewhat stiff and formal in design, the piece is not without charm, due in part to the peculiar color, the boldness of the relief, the complexity of the design, and the perfection of polish and finish.

The material is translucent, homogeneous and compact. When a strong light is allowed to pass through it a number of white, almost opaque, inclusions, apparently nephrite, are seen.

642

CHIEN-LUNG (1736-1795)

ROUND DISH (*P'an*)

CHINA

Dimensions: 1.19 × 10.91 inches. 3.0 × 27.7 centimetres. Weight: 1 pound 4.024 ounces. 567.670 grammes  
 Specific gravity: 2.9757; hardness: 6.5. *Nephrite*  
 Color: Light sage-green veined and specked with white and sprinkled with some black spots

A large round dish of flattened saucer-like form, with plain interior, becoming gently fluted toward the foliated rim. The border is decorated outside with a double whorl of upright, superimposed leaves, carved in slight relief. The base is carved in the shape of a large spreading flower having eight imbricated petals with gracefully curved outlines and a short stalk curled round in the middle.

The decoration of this piece has many points about it that suggest the work of an Indian artist. The weight of evidence presented by a close study of it, however, leaves little room to doubt its Chinese origin, influenced to some extent by such specimens of Indian workmanship as found their way into China in the second half of the eighteenth century.

The material of the dish is translucent, homogeneous and compact, and shows a veining which by transmitted light appears to be more sinewy than the mass itself. In several parts this is thickly filled with a subtranslucent grayish or brownish inclusion, evidently nephrite, as well as some large black metallic particles, evidently chromic iron, almost suggesting a dendritic outline, which, however, does not exist. The piece is remarkable for its sonorousness. When supported so as not to interfere with its free vibration, and struck on the extreme edge with a soft wooden hammer, Professor Hallock found the fundamental vibrations to be 456 per second (A sharp), and the duration of the tone twelve seconds.

643

LARGE ROUND DISH (*Ta P'an*)

CHIEN-LUNG (1736-1795) CHINA

Dimensions: 2.31 × 11.22 inches.  
 5.9 × 28.5 centimetres.  
 Weight: 1 pound 3.627 ounces.  
 556.429 grammes  
 Specific gravity: 2.9939; hardness: 6.5.  
*Nephrite*  
 Color: Sage-green with yellowish tint and  
 tiny opaque white spots simulating  
 rice-meal disseminated through it

A large round saucer-shaped dish, carved outside with scroll bands and conventional pattern of Indian style. The dish is polished to an exquisite thinness, so that when balanced upon one hand and tapped near the rim with the knuckle of the other hand it gives out a sonorous musical ring equal to that of the finest bronze and silver bell; when tapped with the nail, in the Chinese fashion of testing the tone of an egg-shell porcelain plate, the note is that of a most delicate chime. The decoration is carved in relief outside in such a way as to produce its fullest effect in the interior, where it appears by transmitted light as a delicately shaded pattern with a luminous background.



The surface of the dish is decorated outside with three encircling bands of conventional floral ornament, consisting, above and below, of a narrow band of single flowers enclosed within the folds of a spirally waved line, separated by a broad band composed of a series of foliated lozenges, each containing three formal flowers springing from a stem between two leaves, filled in with other simple floral designs. The base is modelled in the outline of a conventional chrysanthemum with a star-shaped foliated pattern of eight rays in

the middle, surrounded by two fluted rings, representing the florets of the blossom, separated by a third ring, carved in parallel curvilinear segments as if to indicate the venation of eight leaves.

If this dish is not of Indian workmanship, it is a marvellous example of the imitative skill of the Chinese artificer.

The material is very homogeneous and translucent,—almost transparent,—and of remarkable sonorousness, the tone emitted when the rim is struck with a soft wooden hammer lasting eighteen seconds.

## 644 CH'EN-LUNG (1736-1795)

MUSICAL STONE (*Chi Ch'ing*)

CHINA

Dimensions: 13.47 × 9.44 × 1.97 inches. 34.2 × 24.0 × 5.0 centimetres. Weight: 11.808 ounces. 334.782 grammes  
Specific gravity: 2.9651; hardness: 6.5. *Nephrite*  
Color: Very light sage-green with yellowish tint

A flat obtuse-angled musical plaque or gong. The body of the plaque, above, is carved in relief with a band of archaic scroll design, alike on the two sides, starting from the head of the monster, and surrounded by a border similar in outline to that of the plaque itself. The body is decorated on one side with five bats, emblems of five kinds of happiness, flying in clouds among which four stars are visible, and two ju-i sceptres with fungus heads bound round with fillets, emblems of longevity, above a border of sea waves which are beating, with curling crests, against rocks in the middle. The other side has, above a border of sea waves, the full moon enveloped in clouds, with seven stars arranged in the shape of the constellation of the Great Bear, flanked on either side by a picture of a vase containing a ju-i wand together with a branch from which hangs, suspended by a looped cord, a musical stone. This picture reads as a rebus, *P'ing ch'ing ju-i*, "Peace, good fortune, and wishes fulfilled!" (*p'ing* meaning "peace" as well as "vase"). The plaque is carved in openwork along the upper rim with an archaic scroll starting from the head of a phoenix which projects on either side. It is suspended by a double chain of twenty-one links connected above by a looped handle, and has hanging below it a pair of little fishes dangling by chains from the outstretched wings of a bat.

The material is translucent, homogeneous and compact, and shows by transmitted light a veining running horizontally through the piece.

The Chinese were the first to give stone a place in music. In that section of the "Shu King," or "Book of History," which is called the "Tribute of Yü" and gives an account of the labors of the great Yü in remedying the terrible inundation which spread disaster throughout the empire of China about twenty-three centuries B. C., and the regulations he made in reapportioning the provinces and determining the tribute to be furnished by each, we find frequent mention of the *ch'ing*, or "sounding stone," and of *ts'o*, or stones for polishing the "sounding stones." The "Book of Poetry," a collection of ancient odes ranging from 1765 B. C. down to the sixth century B. C., and said to have been edited by Confucius, refers to the *ch'ing*, or "musical stone," in connection with the *shêng*, or mouth-organ, the flute, and the drum. There is nothing to indicate the material of those ancient stone instruments, but jade is said to be the best for the purpose. "Another kind of black calcareous stone, however, is said to be preferred because it is easier to work and comparatively much cheaper."<sup>1</sup>

These sounding stones were of several kinds: (1) The "single sonorous stone," used "to receive the sound" at the end of a line, as in chanting the hymn to Confucius in the ceremonial services in his honor. This is in the shape of an obtuse-angled carpenter's square, the shorter arm being 1.8 feet in length; the longer (the one struck), 2.25 feet. (2) The "stone chime," the arms of which measured 1.35 and 1.8 feet respectively, of sixteen similarly shaped pieces, all of the same size, but differing in thickness,—the thicker the material the deeper the sound. This, called *p'ien-ch'ing*, is used exclusively in court and religious ceremonies. (3) The *ko-ch'ing*, or singer's stone chime, on the same principle as the *p'ien-ch'ing*, but composed of from twelve to twenty-four stones, which were cut in fantastic forms—fishes, bats, and the like.



## 645 CH'EN-LUNG (1736-1795)

ROUND BOX (*Yuan Ho*)

CHINA

Dimensions: 3.75 × 6.34 inches. 9.5 × 16.1 centimetres. Weight: 1 pound 1.071 ounces. 483.988 grammes  
Specific gravity: 2.9783; hardness: 6.5. *Nephrite*  
Color: Light sage-green

A round box with a cover, carved with pierced floral designs and symbols so as to resemble lacework. The box is of the shape of a deep saucer with a solid projecting rim round the foot. The cover,

of similar form, has the rim excavated inside, so that it fits over the rim of the box, which is correspondingly excavated outside, leaving a rim projecting upward within. The box is decorated with a broad

<sup>1</sup> See Chinese Music, by J. A. Van Aalst (Shanghai, 1884), a very complete monograph published by the Imperial Maritime Customs of China, to which service Mr. Van Aalst belongs.





band of peony scrolls, with flowers and leaves elaborately carved in openwork and engraved on the surface. The cover has a floral band of similar design. This is separated by a narrow concave solid ring from the round top, which is also carved in openwork in intricate floral scrolls interrupted by symbols. The round form of the longevity character (*shou*) occupies the middle, and is surrounded by a circle of Buddhist symbols, the eight felicitous signs (*pa chi-hsiang*) bound round with fillets, arranged in the following order: the flaming wheel, the canopy, the fish, the vase with millet, the peony flower, the umbrella, the knot, and the conch-shell.

The material is translucent and compact, but entirely filled with small subtranslucent inclusions that appear grayish and grayish-green in color. The thinner parts show well the sinewy structure, as well as a slight opalescent reflection. Remarkably sonorous.



## 646 CHIEN-LUNG (1736-1795)

MUSICAL STONE (*Chi Ch'ing*)

CHINA

Dimensions: 4.22 × 8.81 × .28 inches. 10.7 × 22.4 × .7 centimetres. Weight: 9.811 ounces. 278.145 grammes  
Specific gravity: 2.9787; hardness: 6.5. *Nephrite*  
Color: Olive-brown

A plaque modelled in the form of a broad obtuse-angled band, with the lower corners bevelled off so that the upper border is longer than the lower. Suspended by a cord passed through the apex of the obtuse angle above, it is struck with a little hammer in the manner of a gong. The body is carved in relief with a monster's head at the top so as to hang, as it were, from its mouth, and decorated on both sides with a ground of the peculiar double spiral pattern known to the Chinese as the "coiling silkworm scroll," interrupted in three places by round longevity characters, and bordered by a plain band curving in at the sides. The upper rim is ornamented with archaic openwork scrolls, springing from the heads of dragons. The two ends are carved in the form of fish projecting in full relief with openwork.

Musical stones of this kind are favorite presents on felicitous occasions. Apart from the symbols of happiness and longevity with which they are ornamented, the form itself conveys an auspicious wish, in the punning way of which the Chinese are so fond. *Ch'ing* means "fortunate" as well as "musical stone"; and *yü*, "plenty" as well as "fish"—so that the combination *Chi ch'ing yü* reads either, "A jade musical stone with fish," or "Good fortune and plenty."

The material is translucent and compact, with a number of vein-marks that are faintly brown in color. The sinewy structure is very perceptible when a strong light is allowed to pass through it.

## 647

WATER-DISH (*Pi Hsi*)

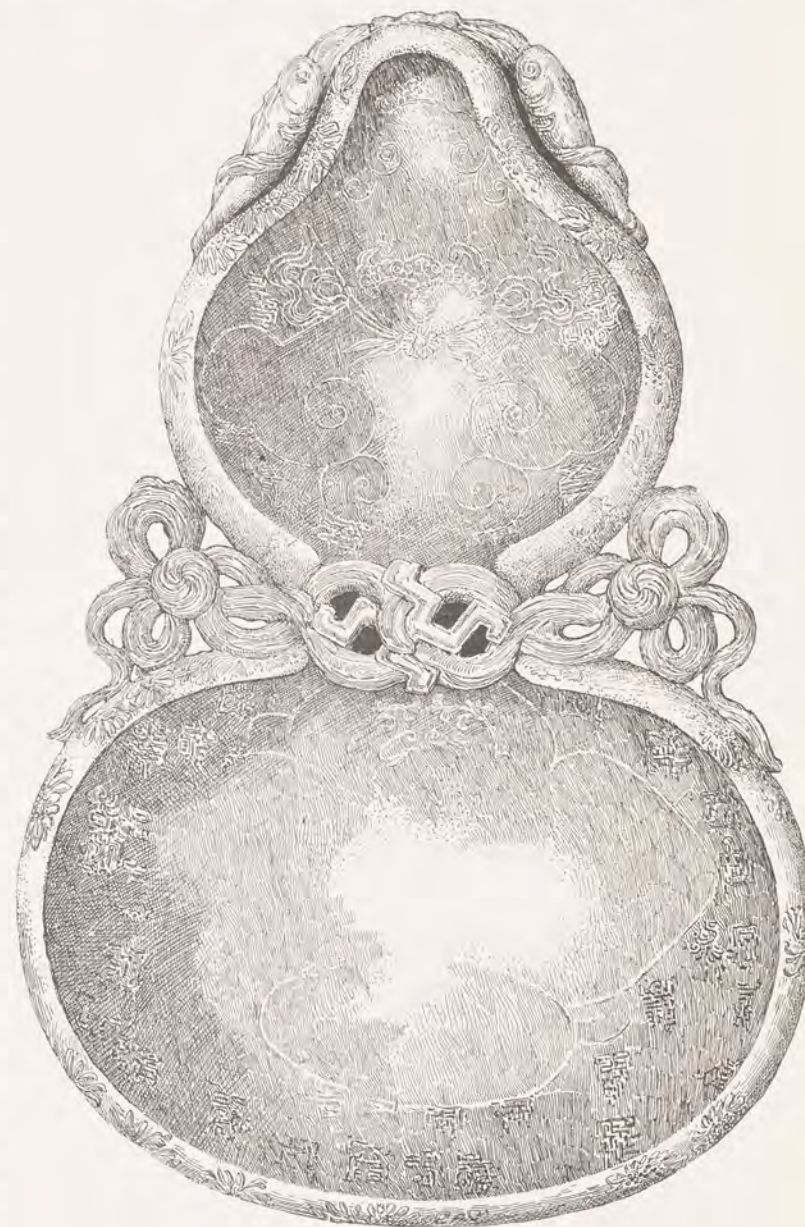
CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 2.03 × 12.97 × 8.5 inches. 5.2 × 32.9 × 21.6 centimetres.  
Weight: 1 pound 8.963 ounces. 707.713 grammes  
Specific gravity: 2.9307; hardness: 6.5. *Nephrite*  
Color: Sage-green of various shades, with a few patches of light brown

A large water-dish, modelled for the use of the writer or the artist, in the form of a double-gourd (*hu-lu*) laid on its side and hollowed out into two cavities so as to make a pear-shaped bowl of the upper part of the gourd and a broad oval bowl of the lower part, communicating at the middle, but separated by a broad bridge corresponding to the waist of the gourd. This waist is bound round outside with a double fillet which has the swastika symbol strung on in front, and terminates on either side in knotted loops carved in ornamental openwork and filled in with gold, forming a handle to hold the dish in the middle. The button-like stem of the gourd has a loop on each side, to which are strung two fishes by fillets passing through their bodies and curving up again below, also carved in openwork and finished with gilding, so as to afford a means of suspension.

The dish, which has been reduced by cutting, grinding, and polishing to a nearly egg-shell thinness, has the rim curving inward. Its smooth surface is decorated inside and out with the same elaborate brocaded pattern, filled with symbols of happiness and longevity, all lacquered in gold, now partially defaced from wear. Above is seen a bat, with extended wings, which has a fillet in its mouth strung with a flower and terminating on each side in wavy folds round a brocaded ground bounded by spiral scrolls. The oval part below has a similar brocade-scroll, con-





taining the circular form of the longevity character surrounded by delicate leafy sprays. The rest of the ground, interrupted by the brocade designs, is filled with the hundred diverse forms of the longevity (*shou*) character. The shoulder of the rim is painted, moreover, with chrysanthemum flowers, scattered irregularly so as to extend all round the periphery of the vessel.

This is a remarkably large and perfect piece of nephrite, modelled

and decorated in true Chinese taste. To the eye of an artist, the graceful contour of the dish, the softness of the colors, and the delicacy of the decoration are very charming.

The material is translucent, homogeneous and compact. When a strong light is allowed to pass through it, a faint veining of a trifle darker and slightly more opaque material is seen.

648  
649

CH'EN-LUNG (1736-1795)

PAIR OF ROUND DISHES (*P'an-tzu*)

CHINA

Dimensions:  $1.0 \times 5.12$  inches.  $2.5 \times 13.0$  centimetres. Weight: 648=4.974 ounces. 138.020 grammes  
649=4.798 ounces. 136.017 grammes

Specific gravity: 2.9758; hardness: 6.5. *Nephrite*  
Color: Sage-green

A pair of small round saucer-like dishes, undecorated, with slightly expanding lip and a broad circular rim below.

The material of both is very compact and homogeneous, and has taken a perfect polish. Throughout part of No. 648 there is a mottling of a trifle more opaque and slightly darker substance which is apparently nephrite, and on one side there is an inclusion of a pronounced crystalline structure which may be the remains of the original jadeite. No. 649 also contains inclusions of a slightly more opaque and darker green nephrite and a number of tiny veins of a sinewy, almost white material.

As seen in thin sections in the microscope, there is a faint suggestion of patches derived from previous pyroxene, but the amphibole fibres are in a confused aggregation, with occasional longer streaks of nearly parallel fibres.

The composition determined by Walden's analysis of part of No. 648 is here given, along with Clarke's reduction of the same:

	NaAlSi <sub>3</sub> O <sub>6</sub>	NaFeSi <sub>3</sub> O <sub>6</sub>	Nephrite	Abstract
Silica . . . . .	57.42	5.49	49.97	Nephrite . . . . . 85.51
Alumina . . . . .	2.66	2.35	.31	NaAlSi <sub>3</sub> O <sub>6</sub> . . . . . 9.26
Ferric oxide . . . . .	1.31	1.31		NaFeSi <sub>3</sub> O <sub>6</sub> . . . . . 3.78
Ferrous oxide . . . . .	1.78		1.78	Excess water . . . . . 1.01
Manganous oxide . . . . .	.28		.28	
Magnesia . . . . .	14.30		14.30	
Lime . . . . .	16.19		16.19	
Soda . . . . .	1.93	1.42	.51	
Water . . . . .	3.69		2.68	
	99.56	9.26	3.78	85.51

The nephrite is distinctly hydrous, and the excess of lime over magnesia in it indicates its pyroxenic origin.

650

CH'EN-LUNG (1736-1795)

SMALL FLOWER VASE (*Hsiao Hua P'ing*)

CHINA

Dimensions:  $3.0 \times 1.5$  inches.  $7.6 \times 3.8$  centimetres. Weight: 2.583 ounces. 73.241 grammes  
Specific gravity: 2.6409; hardness: 3.0 to 5.0. *Calcined nephrite*  
Color: Ashy-gray, yellow, and brown

A small cylindrical flower vase with a spreading foliated foot, hollowed out underneath, and a broad foliated projecting rim, the foliations corresponding to the five vertical lobes of the cylinder, each of which has an oblong foliated sunken medallion filled with a deeply incised flower-spray with conventional leaves. The base of the cylinder is surrounded with two projecting cord-like bands which enclose a finely engraved fret ornamentation, while the spreading foot is ornamented, at its junction with the cylinder, with a double row of minute godroons, the nicety and precision of which point to the Yung-chêng or the Ch'ien-lung period, which together extended from 1723 to 1796. Apart from this exactness of decoration and the unusual smallness of the cylinder, the piece is interesting from the fact

that it has been calcined by exposure to heat, if not to fire, in some great conflagration which has affected not only the color, probably originally white, but also the substance of the vase itself, reducing the specific gravity from 2.9+ to 2.64, and the hardness from 6.5, the normal hardness of nephrite, to 3.0 at the lower end and 5.0 at the upper end.

The little quadrangular vase No. 395, the small incense-burner No. 394, and the double-dragon vase No. 435 of the Collection, show somewhat similar heat and fire effects and should be studied with this.

It is noteworthy that the bottom of the vase is perforated and that the diameter of the cylinder is less at the bottom than at the mouth.

651

FIGURE OF LONGEVITY DEITY (*Shou Lao*)

CHINA

CH'EN-LUNG (1736-1795)

Dimensions:  $3.62 \times 1.69 \times 1.38$  inches.  $9.2 \times 4.3 \times 3.5$  centimetres. Weight: 6.609 ounces. 187.392 grammes  
Specific gravity: 2.9603; hardness: 6.5. *Nephrite*  
Color: Variegated brown, with exception of the head and hand, which are white with greenish tint

A statuette of the Taoist god of longevity standing upon a pedestal of cloud accompanied by the usual attributes. The different colors of the stone are ingeniously utilized in the carving to enhance the

effect, so that the translucent white face and hand show out in vivid contrast to the dark subtranslucent rich coffee-brown and grayish-brown surrounding. He is represented as an aged man with bowed



back, dressed in long flowing robes, and resting upon a gnarled staff which he holds in his right hand. In the other hand he grasps a large peach, the sacred fruit of immortality. A double-gourd is slung from the top of the staff, and a bat, emblem of happiness, is clinging to the end. The forehead of the deity is high and protuberant, the features wrinkled and smiling, and the beard long. The pedestal is covered with spiral scrolls to represent a band of clouds, upon which a sacred deer stands at the side of the god.

Shou Lao, the "Ancient of Ages," is one of the principal deities of the Taoist pantheon and is universally worshipped by the Chinese. He is the third of the triad which figures prominently in native art and in native thought and life—Fu, Lu, Shou, the "star-gods" of happiness, rank, and long life; *Shou Lao* being an incarnation of the "star of longevity," situated near the south pole of the heavens. In

Japan he is reckoned one of the seven gods of good luck, and is known as Ju-ro. Besides the gnarled staff, the peach, the double-gourd, the bat, and the deer here represented, his attributes include the crane and the tortoise; and as Lao-tzū, the reputed founder of Taoism, is supposed to have been one of his incarnations, he frequently carries a scroll suspended from the top of his staff, representing the "Tao Tê Ching," the famous book of five thousand words which the philosopher gave to the warden of the gate through which he passed out of China. He was last seen riding off toward the west on an ox. Here Shou Lao stands with his deer on a cloud, but he is often represented as seated on a rock near the sea-shore, with the Pa Hsien, or eight genii of Taoist fable, floating over the waves toward him to worship him. Sometimes he sits enthroned, surrounded by a crowd of immortals bearing musical instruments and offering incense.

## 652 CH'EN-LUNG (1736-1795)

ROUND SCREEN (*Yuan Ch'a P'ing*)

CHINA

Dimensions: 11.59 × 7.5 × 2.94 inches. 29.4 × 19.0 × 7.5 centimetres. Weight: 2 pounds 11.746 ounces. 1239.638 grammes  
 Specific gravity: Screen=2.9521; hardness: 6.5. *Nephrite*  
 Stand=2.9724; 6.5. *Nephrite*  
 Color: Screen=White with light greenish tint  
 Stand=Spinach-green

A round white disc with a picture of a mountain landscape delicately and artistically carved in high relief upon the front. Lofty peaks enveloped in clouds form a background to a temple of orthodox Chinese form built on a terrace upon the rocks and shaded by large dryandra trees, the front veranda of the temple being covered by an awning supported by poles. Rocky steps are cut in the steep mountain-side leading down to the water, which is seen flowing by in a broad stream below, with an ancient pine stretching its evergreen branches across and leafy undergrowth fringing the banks. Upon a platform of rock in the foreground stand two boys, with their hair growing in side tufts, dressed in long flowing robes; one of the pair beating with a mallet the jade musical stone, of characteristic form, which the other is holding up suspended from its frame. The children's heads are remarkable examples of hard-stone sculpture. Their faces are worthy of close attention, for on them the patient artist seems to have concentrated his best efforts. The reverse side

is carved in slight relief with a floral design composed of sprays of chrysanthemums with single and double blossoms growing from rocks. It is curious to notice how ingeniously the rocky outlines of the pictures are made to coincide with an original crack in the material, so that the flaw emphasizes rather than detracts from the general effect of the scene.

The high pedestal is elaborately carved in openwork green jade: an oval base surrounded by floral scrolls supporting a pair of upright phoenixes, from the top of which extend two scrolls terminating in conventional dragons' heads and forming a broad socket for the round disc.

By transmitted light the material is seen to be remarkably translucent and beautiful, very homogeneous and compact, and almost entirely free from inclusion or impurity, except at the lower end of the piece, where there are some tiny brown spots.

## 653 CH'EN-LUNG (1736-1795)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions: 2.44 × 1.31 × 1.0 inches. 6.2 × 3.3 × 2.5 centimetres. Weight: 1.930 ounces. 54.706 grammes  
 Specific gravity: 2.9305; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint and mottled spinach-green

A small snuff-bottle in the form of a brinjal or aubergine fruit, the white variety of the egg-plant (*Solanum Melongena*). The persistent calyx, carved in naturalistic shape, with the sepals etched in lines of dots, is made of translucent green nephrite, and so tightly fastened on as to appear to belong to the same piece. The interior is hollowed out as a receptacle for snuff.

The material is translucent, homogeneous and compact, and shows an apparent stratification parallel to the length of the bottle. When examined closely, white spots are visible which are reflections from the bedded structure. Inclusions of chromic iron are found in the green calyx.



## 654 CH'EN-LUNG (1736-1795)

BUDDHIST COLUMN (*Fo Tung*)

CHINA

Dimensions: 17.81 × 5.28 inches. 45.2 × 13.4 centimetres. Weight: 4 pounds 4.967 ounces. 1195.216 grammes  
 Specific gravity: 2.9462; hardness: 6.5. *Nephrite*  
 Color: Column=Light gray with a faint greenish tint  
 Base=Dark spinach-green  
 Top=Olive-green

A tall hollow cylindrical column carved as a mountain landscape with trees, through which a torrent runs, passing under a bridge formed by a natural arch in the rock and dashing down in curling

waves below—all executed in the highest style of Chinese art. The scene is filled with Buddhist figures representing Sakyamuni and his principal disciples, the sixteen Indian Arhats, carved in high relief







No. 652

**ROUND SCREEN**

*(Yuan Ch'a P'ing)*

Ch'ien-lung (1736-95)

Nephrite











and finished with the utmost delicacy. The circumference of the cylinder is polished to such extreme tenuity in some parts as to be perfectly translucent. When the cylinder is placed before the light, on account of the extreme thinness of the back (which is as thin as paper) the figures on the front stand out in their different attitudes with marvellous distinctness and solidity from the luminous background; and the trees, which include pines, sal trees, and the sacred fig (*Ficus religiosa*), loom up prominently in the foreground. The figure of Buddha is seen in the middle, occupying the most prominent position near the top, seated cross-legged upon a mat spread on the ledge of rock overshadowed by branches of trees, which droop gracefully from above so as to form a natural canopy. Dressed in long robes, with hands folded in his lap and hair arranged in traditional curls, he sits as if entranced, his features fixed in a state of ecstatic contemplation, enthroned, as it were, upon the rock of ages. His youthful aspect offers a strong contrast to the aged, wrinkled faces and bowed figures of the disciples who are grouped upon the rocks below. These sixteen Arhats, who may generally be identified by their different attributes, are represented as aged monks with shaven heads, provided with the proper paraphernalia of their pilgrim profession. Of the two seated upon the rocks immediately at the feet of Buddha, one carries the mendicant's alms-bowl in his hands; the other with a gnarled pilgrim's staff holds a rosary and a rolled scroll, a picture or manuscript. Of the rest, some have only the rosary or the pilgrim's staff, others the palm leaf which the monk is instructed to use as a fan to drive away mosquitos, one has a bundle of palm-leaf books on a rock beside him, another a scroll partially unrolled in his lap. On the far right one is seated within a cave, with hands folded in his sleeves; on the far left a second is pensively fondling a pair of long overgrown eyebrows; while a third at the bottom is stooping over a magic tripod bowl from which a stream of water is ascending.

The cylindrical column has a pedestal and two covers, all carved in spinach-green and olive-green jade. The pedestal is modelled above in the form of a lotus thalamus encircled by two whorls of petals, fifteen in each, the petals in the outer whorl each having carved in relief on its outer surface the character *ku*, "ancient." This is supported upon a foot which springs from another recurved whorl of twenty petals, each with the same character *ku* in relief, and is surrounded by another circle of ten petals, differing in size, elaborately carved in openwork of floral design so that the pedestal rests upon the points of the five largest petals. It is decorated, besides, in the middle with a ring of pearls carved in half relief. The inner cover is a disc carved in openwork with a floral design, similar to that upon the foot of the stand, with a projecting circular rim underneath so as to fit like a flat lid upon the cylinder. The outer cover, of much more solid and bold design, fits over the top of the column so as to conceal completely the flat openwork lid. It is fashioned in the form of a full-blown lotus blossom with the floral details arranged in such a way as to carry out all the curved lines of the roof of a pagoda. The outer whorl of petals bends down to hide the solid rim which fits over the mouth of the cylinder, the next two whorls project outward with the petals tilted at the tips like the outline of a Chinese roof, while the two succeeding rings stand up to form the imbricated tiles of the ring. These are succeeded by a circle of delicate stamens with a ring of smaller petals above them

enclosing another staminal circle which invests the capsular fruit. The fruit contains seven cells—six outside, carved in openwork with the swastika symbol, surrounding one in the middle which is left open. There is a round hole in the middle of the pedestal so that a central metal rod might be inserted so as to pass through the cylinder and, holding all the parts together, project at the top through the hole in the capsule to form the crown of the pagoda. The cover is perforated below with a ring of double holes for the suspension of the silken network and tassels which would hang down for ornament and to shield Buddha from the vulgar gaze.

This beautiful piece, which is one of the gems of the Collection, is specially interesting as showing the capacity of jade as a material for artistic work, and the patience of the Chinese artist in carving so hard a stone in such elaborately minute detail and perfect finish. His skill in adapting his design to his material is well shown in his treatment of the cover or uppermost member of this beautiful column. What might appear as a heavy effect in this superstructure with its overhanging eaves, as compared with the slender grace of the shaft, has been overcome by the selection of a shade of green much lighter than that of the supporting base, the dark green of which imparts a massiveness to it, delicately carved and undercut though it be, that could not be obtained in a lighter color. It is in the use in this case of the darker shade for the base, and the lighter for the lofty and more airy parts, that the artistic instinct of the artist-workman is evinced.

The material of the column is translucent, especially in the thinner worked parts, and of very compact and even texture, with some dark lines running the entire length of the column. By transmitted light the thinner portions are seen to be very sinewy and almost opalescent. The base and the cover are also translucent and compact, and both are characterized by inclusions of a black metallic substance, evidently chromic iron.

To the student of Buddhism the piece, as it stands on its lotus pedestal crowned by the blossoms above, is a complete epitome of the Buddhist cosmogony. In their usual disregard of time and space, the Buddhists figure the universe as having passed through all its infinite æons of years in the time that a lotus takes to unfold its petals and ripen its fruit. We have such a fabulous blossom here before us, its base, the lotus thalamus which may well be labelled "ancient," supporting the column of the universe passing through the present *kalpa*, or age, during which the Buddha Sâkyamuni sits enthroned in Nirvana while the lotus ripens its seventh seed. It has already ripened six seeds during the long successive periods of the past ages, or *kalpas*, during which the other six Buddhas, the fabulous predecessors of the historic Buddha, are supposed to have presided over the universe, symbolized by the six empty cells of the capsule crowned by the swastika emblem.

It seems almost a profanation to use such a sublime theme for the decoration of a mere incense-burner, for which the column must also have been intended as shown by the perforated lid which forms the cover. It may be that such use is secondary; and it has been suggested in support of this idea that the minute openwork decoration of the pedestal and lid contrast in style with the bold treatment of the cover, and also that the green color of the jade is a shade darker in the former.

## 655 CH'EN-LUNG (1736-1795)

PAPER-WEIGHT (*Shu Chên*)

## CHINA

Dimensions: 1.16 × 2.62 × 1.59 inches. 2.9 × 6.6 × 4.0 centimetres.

Weight: 4.226 ounces. 119.809 grammes

Specific gravity: 3.0116; hardness: 6.5. *Nephrite*

Color: Light green clouded with a rich dark green and an intermingling of jet-black specks

A solid little paper-weight or ornamental pendant for the girdle (being perforated at one end for suspension), elaborately and delicately carved in the likeness of a fruit of the vegetable sponge. The warty skin of the spindle-shaped gourd is naturally copied, and its surface is covered with leaves, tendrils, and a beautifully finished flower, all springing from the same stalk. A grasshopper is lying

upon one of the leaves, its natural outline figured to the most minute detail.

The material is translucent, homogeneous and compact, and of remarkable purity, with few of the inclusions of the black metallic substance so frequently found in jade.





656  
657PAIR OF INCENSE-BURNERS (*Kai Wan Lu*)  
CH'IENT-LUNG (1736-1795)

CHINA

Dimensions: 4.72 × 5.72 inches. 12.0 × 14.5 centimetres.  
 Weight: 656=1 pound 7.049 ounces. 653.435 grammes  
 657=1 pound 8.638 ounces. 698.500 grammes  
 Specific gravity: 656=2.9947; hardness: 6.5. *Nephrite*  
 657=2.9939; 6.5. *Nephrite*  
 Color: A mixture of pear-leaf-green with rich dark green and light greenish-gray

A pair of incense-burners (*hsiang-lu*) fashioned in the shape of small bowls (*wan*) with low rimmed feet and bevelled flaring edges, with high covers (*kai*) carved in openwork. The body is encircled by a broad sunken band carved in low relief with a conventional design in four identical divisions, each consisting of the head of a gluttonous ogre (*t'ao-tieh*) flanked by scrolls ending in dragons' heads, which are interlaced with similar scrolls in the next division so as to form a continuous band. The cover is carved in openwork with an intricate pattern of floral design in the midst of bands of formal scrolls. It is surmounted by a cup-shaped handle with pierced ornament and foliated rim.

Both of these pieces seem to have been cut from the same stone, which exemplifies a rare combination of variegated colors much valued by the Chinese. There are inclusions of a black metallic substance, evidently chromic iron, which are more pronounced in No. 657 than in No. 656 and add greatly to its beauty.



658

CH'IENT-LUNG (1736-1795)

VASE WITH COVER (*Kai Ping*)

CHINA

Dimensions: 5.31 × 6.75 × 2.72 inches. 13.5 × 17.1 × 6.1 centimetres. Weight: 1 pound 10.513 ounces. 751.653 grammes  
 Specific gravity: 3.0098; hardness: 6.5. *Nephrite*  
 Color: Unevenly variegated brilliant pear-leaf-green and light greenish-gray clouded by a rich dark green

A covered vase designed after the model of an ancient sacrificial wine-vessel of bronze. The figure of a phoenix is boldly carved in openwork, with its crested head turned back toward the shoulder, its long tail curved under between the legs, the flames indicating its supernatural properties being shown on the breast. The body of the phoenix is excavated to form the body of the vase, which slopes inward above into a broad, low neck bounded by an oval rim at the top and with a wide, open handle of scroll outline on either side. This is surmounted by a low cover with bevelled edge which has a tiny dragon lying upon top. Upon the body is represented another larger dragon, small, however, in proportion to the size of the phoenix, which is vigorously executed in relief with openwork as if coiling round from the back so that its head stands out opposite to that of the phoenix. The bearded dragon has



two bifid horns, retracted claws, and a long scroll-like tail curling around at the tip, being modelled after the lines of the lizard-like dragon (*ch'ih*) of old bronzes. It rests partly upon cloud-scrolls, and upon another pile of clouds mounting up at the back so as to project above the rim of the vase is poised a bat with extended wings.

The material of this curious piece is highly translucent and very compact and homogeneous. It is quite remarkable for the rare combination of color which it displays, which, when a strong light is allowed to pass through the piece, the colors resolve into a pale yellow-green with emerald tint, and an almost black green. Such a combination is very highly prized by the Chinese, and is seldom seen. When a strong light is allowed to pass through the cover it is seen to be of quite a beautiful emerald-green.

659

CH'IENT-LUNG (1736-1795)

"LONGEVITY MOUNTAIN" (*Shou Shan*)

CHINA



Dimensions: 4.06 × 4.25 × 2.75 inches. 10.3 × 10.8 × 5.3 centimetres.  
 Weight: 1 pound 6.206 ounces. 629.542 grammes  
 Specific gravity: 3.0218; hardness: 6.5. *Nephrite*  
 Color: Bright golden-emerald flecked with yellow weathered spots

A little irregular piece carved in bold relief in the form of a mountain with trees and water in the usual style of a Chinese landscape, the pine occupying a conspicuous place. A stairway is cut in the hillside leading up to a pavilion with four pillars which is built upon a platform of rock above. In the foreground stand two figures in Taoist costume: an old man with a peach in his hand, representing Shou Lao, the god of longevity, accompanied by a youthful attendant carrying a branch upon his shoulder. At the back appears a similar scene with longevity emblems, including a pair of storks and a gigantic sacred fungus (*ling-chih*) growing from the rocks below.

This is a piece of remarkable purity. Chromic iron is almost entirely absent, but on one side there is a patch, two millimetres across, of what is apparently limonite.



660

VASE (*Pei Hu P'ing*)

CHIEN-LUNG (1736-1795)

CHINA

Dimensions: 12.06 × 7.22 × 2.75 inches. 30.6 × 18.3 × 7.0 centimetres.

Weight: 7 pounds 4.245 ounces. 3295.491 grammes

Specific gravity: 2.9857; hardness: 6.5. *Nephrite*

Color: A mottling of spinach-green and gray, with stainings of brown

A large vase of pilgrim-bottle shape and rounded section, with the oval body springing from a spreading foot which is surrounded with a plain prominent band round the base. The broad neck expands into a band of similar breadth and size round the mouth, which is flanged inside to hold the cover of vaulted form culminating in a hollow handle, undercut with plain bands of ornament round the base. At each side of the neck is a loop-handle springing above from the mouth of a grotesque winged monster's head and supporting a large movable ring suspended from it below. The vase is decorated on both sides with an identical design, executed in relief within a sunken panel corresponding in outline to that of the body so as to be separated from it by a narrow border. This design consists of the eight Buddhist symbols of good augury (*pa chi-hsiang*) supported by floral sprays. These last consist of branches of the tree-peony filling the base of the panel, with a large blossom in the middle and sprays springing from it on either side. The Buddhist symbols are unconventionally grouped, with a large canopy (*kai*) at the top, hanging on a frame carved at the two ends, upon which is strung by knotted fillets a pair of broad-headed Pimelodus fish (*yü*), below which stands the vase (*p'ing*), with a lotus leaf as its cover, upon the large peony, so that its base is hidden by the petals of the flower. A large flower (*hua*) stands up on either side of the canopy, and below are the other four symbols encircled with fillets—the shell (*lo*) and knot (*chang*) upon the left; the umbrella (*san*) and chakra "wheel" (*lun*) upon the right.

The material is subtranslucent, homogeneous and compact, with a veining of a faint gray and spinach-green, through which appear specks of a black metallic substance, evidently chromic iron.

661  
662

CHIEN-LUNG (1736-1795)

TWO ROUND DISHES (*P'an-tzū*)

CHINA

Dimensions: 1.19 × 6.12 inches. 3.0 × 15.5 centimetres. Weight: 661=6.496 ounces. 184.167 grammes

662=6.717 ounces. 190.438 grammes

Specific gravity: 661=3.0000; hardness: 6.5. *Nephrite*662=3.0023; 6.5. *Nephrite*

Color: Spinach-green mottled with patches of grayish-green and spots of black

A pair of small round saucer-shaped dishes of the conventional chrysanthemum pattern, boldly carved and beautifully finished, with three concentric rings of flutings surrounding a plain centre.

The material is so translucent that print in contact with the dishes

can be read through the lighter shadings. Both pieces are remarkable for the large patches of the black metallic substance—probably chromic iron—whose presence is so characteristic of nephrite.

663

CHIEN-LUNG (1736-1795)

SMALL BEAKER (*Hsiao Tsun*)

CHINA

Dimensions: 2.34 × 3.09 inches. 5.9 × 7.9 centimetres. Weight: 4.601 ounces. 130.444 grammes

Specific gravity: 3.0053; hardness: 6.5. *Nephrite*

Color: Light spinach-green

A miniature vase in the form of a short beaker, with a rounded body springing from a low foot, and the usual flaring neck. The foot is an inverted chrysanthemum with three whorls of florets encircling a cross-hatched middle. The vase is modelled in the conventional chrysanthemum pattern with fluted sides, making a corrugated rim round the top. The inside of the neck is carved with corresponding

concave flutings, that of the body being plainly polished. The flutings are perfect in every detail.

The material of this little vase is translucent, homogeneous and compact, and contains scattered throughout the piece a number of particles of a black metallic substance, apparently chromite.



664 CHIEN-LUNG (1736-1795)

ROUND DISH (*Hsi-tzu*)

Dimensions: 2.12 × 7.72 inches. 5.4 × 19.6 centimetres. Weight: 1 pound 10.911 ounces. 762.938 grammes  
 Specific gravity: 2.9937; hardness: 6.5. *Nephrite*  
 Color: Spinach-green mottled throughout with grayish-green spots



A circular deep dish with the base, slightly convex below, supported upon four broad, low, spreading feet ornamented with scroll designs. It is decorated outside with a band of interlacing sprays of the moutan-peony vigorously and sharply cut in relief. From the middle above each of the feet springs a little branch which curves upward to form a loop-handle crowned by a flower and two leaves spreading out upon the rim of the dish. The bottom of the dish is carved inside in very bold relief with a branch of the same flower curled round into a circular panel-like design extending nearly to the circumference.

The material of this dish is a good specimen of the "puddingstone" class of jade. It is translucent, homogeneous and compact, with inclusions of a bright metallic substance, apparently chromic iron.



665 CHIEN-LUNG (1736-1795)

TRIPOD INCENSE-BURNER (*Ting Lu*)

CHINA

Dimensions: 5.56 × 8.62 × 6.28 inches. 14.1 × 21.9 × 16.0 centimetres. Weight: 2 pounds 10.471 ounces. 1204.075 grammes  
 Specific gravity: 2.9740; hardness: 6.5. *Nephrite*  
 Color: Spinach-green



An incense-burner modelled in the form of an ancient bronze tripod (*ting*) with ringed phoenix-handles and cover crowned with a dragon. The round bulging body, which has been cut and polished to a sur-

prising thinness, is rolled in above, where it is bevelled to support the cover, and propped below upon three low solid feet, with grotesque heads executed in relief outside at the point where they spring



from the body. Its convexity is decorated with a broad intaglio band filled with a formal floral design freely and sharply cut, interrupted by the two handles. These handles of looped outline, ornamented with scrolls below where banded rings are suspended, expand above into phenixes, boldly carved in openwork with heads pointing outward and wings stretching back to rest on the rim of the tripod. The cover, of vaulted form encircled outside with a similar band of

formal floral scrolls, is surmounted by a large round handle, carved above in openwork in the form of a dragon coiling round the jewel of omnipotence, from which effulgent rays are issuing. The undercutting is deep and the surface uniformly and perfectly polished.

The material is translucent, homogeneous and compact, with large particles of an included black metallic substance, apparently chromic iron.

## 666 CHI'EN-LUNG (1736-1795)

INCENSE-BURNER (*Hsiang Lu*)

CHINA

Dimensions: 4.25 × 7.84 × 5.47 inches. 10.8 × 19.9 × 13.9 centimetres. Weight: 2 pounds .809 ounce. 930.148 grammes  
Specific gravity: 3.0114; hardness: 6.5. *Nephrite*  
Color: Spinach-green, translucent and bright

An incense-burner in the form of a covered bowl (*kai wan*) with ringed handles. The bowl has a bulging body supported on a low foot encircled by a prominent band and sloping inward above to form a flaring border, which has a rim projecting upward round the edge. The convexity of the body is surrounded by a sunken band decorated in slight relief with conventional scrolls of peonies interrupted by a bat under each of the handles. The free edge of the rim is encircled with an engraved narrow band of rectangular fret

enclosing swastika symbols. The two handles, of simple rectangular form and square section, with movable rings suspended from them, spring from the middle of the body and are crowned by triangular figures of scrolled outline spreading horizontally, outlined above as grotesque heads. The small vaulted cover is encircled by a broad band carved with conventional scrolls enclosing on each side a monster's head flanked by two phenix-heads separated by prominent vertical dentated ridges, six in all, with three foliations in each. It is surmounted by a hollow handle which spreads out in the form of a broad ring carved above with a band of foliated ornament.

The material is translucent and very homogeneous by transmitted light, and shows fleckings, spots, and veins, as well as many included particles of a black mineral like chromite.



## 667

VASE (*Kuan*)

CHI'EN-LUNG (1736-1795)

CHINA

Dimensions: 9.84 × 5.91 inches. 25.0 × 15.0 centimetres.  
Weight: 6 pounds 10.414 ounces. 3016.800 grammes  
Specific gravity: 2.9859; hardness: 6.5. *Nephrite*  
Color: Spinach-green with cloudings of light grayish- and emerald-green

A vase modelled in the form of a tall jar (*kuan*). The body starts from a flat base surrounded by a circular rim beneath, and swells gradually upward toward the broad shoulder, where it is drawn to a low neck ending above in a rounded prominent rim. The outer surface is entirely covered with a decoration of floral scrolls, executed in relief, with sharply cut edges. This consists of a complicated interlacement of formal leaves and highly conventional flowers, among which one seems to recognize the peony, the chrysanthemum, and the lily, but nearly all touched with impossible attributes, such as pistils with beaded stems or grape-like bunches at the tips, or such like adjuncts filling in the ground. The Chinese distinguish this decoration by the name of *Hsi Fan lien*, or "Indian lotus," but they call the passion-flower by the same name.

The material of the vase is translucent, compact and homogeneous, with occasional black metallic points, evidently chromic iron.





VASE (*P'ing*)

CHINA

668

CH'EN-LUNG (1736-1795)



Dimensions: 10.44 × 5.44 inches. 26.5 × 13.8 centimetres.  
 Weight: 5 pounds 9.350 ounces. 2533.040 grammes  
 Specific gravity: 2.9783; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A tall vase of oval form and round section, with two ringed handles. The body springs from a low foot with a plain band round the rim, and swells gradually upward to the shoulder, where it slopes sharply in to the broad neck, which ends in a prominent rim above. The neck has on either side a loop-handle, with a movable ring suspended from it, which is surmounted by a winged monster vigorously carved in openwork. It is encircled by a formal design of leaf-scrolls carved in relief, pointing perpendicularly downward. The foot has a similar design of shorter scrolls surrounding it at the top. The body is carved in intaglio so as to be entirely filled with a conventional pattern of interlacing floral scrolls: a typical example of the so-called "Indian lotus"—*Hsi Fan lien*—decoration. The carving is perfect as well as elaborate, and the polish is very fine even in the smallest recesses.

The material is subtranslucent, homogeneous and compact, and consists of a spinach-green magma entirely filled with faintly yellow-green particles measuring from one half to seven millimetres across. Brilliant black metallic spots, apparently chromite, are fairly abundant.



669

PILGRIM'S BOTTLE (*Pei Hu P'ing*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 10.91 × 9.81 × 2.53 inches.  
 27.7 × 22.4 × 6.4 centimetres.

Weight: 7 pounds 7.517 ounces. 3388.240 grammes  
 Specific gravity: 3.0002; hardness: 6.5. *Nephrite*  
 Color: Light spinach-green with lighter shades of green, brown stainings, and black spots

A flat vase of pilgrim-bottle shape, with a tall rounded body poised upon a low foot and sloping gently at the top into a broad neck. The foot is surrounded below by a plain prominent band. The neck, encircled above by a lightly engraved border of double rectangular fret, has an open handle on either side extending downward upon the body in the form of broad leafy scrolls. The body is decorated with a sunken panel, extending upward over the neck so as to be separated from the outline of the vase by a narrow border, which panel is entirely filled with floral scrolls carved in relief. The decoration consists of a complicated interlacement of formal leaves springing from a large conventional flower in the middle, with a bud on either side higher up—another illustration of the "Indian lotus" design.

The material is translucent and very compact, showing the occasional presence of a black metallic substance, apparently chromic iron, and veinings in several directions of a brown or darker color.

670

CH'EN-LUNG (1736-1795) BOWL WITH TWO HANDLES (*Yuan Hsi*)

CHINA

Dimensions: 2.41 × 7.09 inches. 6.1 × 18.0 centimetres. Weight: 13.419 ounces. 380.440 grammes  
 Specific gravity: 2.9804; hardness: 6.5. *Nephrite*  
 Color: Very dark sage-green

A round shallow bowl, with two ringed handles, modelled after the conventional chrysanthemum pattern. Carved with three concentric

tri rings of flutings, a fourth ring with irregular foliations being indicated in the middle. The base is also designed in the form of a



chrysanthemum, with two rings of florets surrounding a third ring of short and broad form which points inward so as to overlap the centre, which is not engraved. The handles are designed in the form of a sprig of chrysanthemum, the stem of which springs from the middle of the body of the bowl and curves up in a loop. This is crowned by a blossom surrounded by three leaves, of which two spread outward so as to rest upon the rim and the third is folded downward outside. Upon each of the loop-handles hangs a large movable ring.

The whole is cut from one piece of translucent, homogeneous and very compact nephrite, with tiny veins of a lighter nephrite. This piece is interesting from the almost entire absence of the black metallic spots which are so common in nephrite.



671  
672  
673

CHI'EN-LUNG (1736-1795) INCENSE-BURNER SET (*Lu, Ho, P'ing*)

CHINA

Dimensions: 671=4.22 × 7.91 × 3.09 inches. 11.7 × 20.1 × 7.9 centimetres. Weight: 1 pound 9.004 ounces. 708.882 grammes  
672=1.66 × 2.69 inches. 4.2 × 6.8 centimetres. 4.104 ounces. 116.364 grammes  
673=4.97 × 2.66 × 1.19 inches. 12.6 × 6.7 × 3.0 centimetres. 8.782 ounces. 248.975 grammes

Specific gravity: 671=2.9738; hardness: 6.5. Nephrite  
672=3.0031; 6.5. Nephrite  
673=3.0116; 6.5. Nephrite

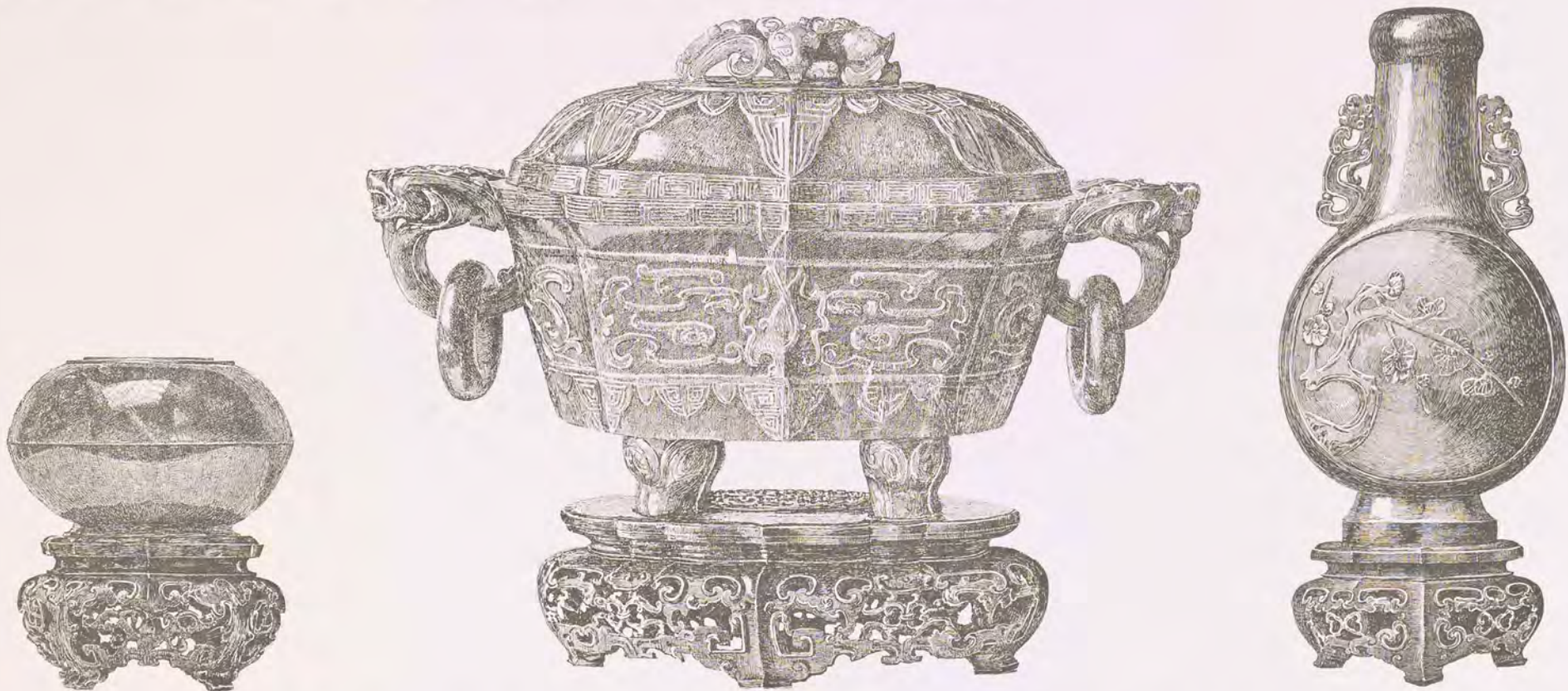
Color: Dark olive-green, translucent, and mottled by lighter shades

A set of incense-burning vessels, comprising an urn (*lu*) for burning the incense, a box (*ho*) for holding it, and a vase (*p'ing*) to hold the miniature set of poker, tongs, and shovel.

The incense-burner, of ancient bronze design, has a deep oval body with a flat base supported upon four short erect feet, and two projecting handles supporting rings on each side of the cover, which is crowned with a dragon. The body is encircled with a broad band filled with the conventional design of grotesque faces in slight relief. An irregular ring of formal foliation surrounds it below,

with the round form of the longevity character (*shou*) within a circular panel.

The vase is of pilgrim-bottle form, has a low, prominently rimmed foot, and a tall neck with a narrow mouth defined by a broad rounded lip. The flat body is ornamented on both sides with a round sunken panel—a floral spray carved in relief within, a flowering branch of plum on one side, a branch of hibiscus (or rose-mallow) on the other. The handles are of openwork archaic scroll design in the conventional form of phenixes.



and a lightly incised Greek fret defines the rim above. Grotesque faces are carved upon the upper part of the legs, and the loop-handles are surmounted by boldly carved monsters' heads proceeding from the rim behind. The vaulted cover, with the rim encircled with a similar lightly incised fret, is decorated in relief with an irregular band of formal foliations of antique design filled in with scrolls. It is surmounted by a coiled figure of the *chi'ih*, the dragon par excellence of old bronzes, with a hornless head, a lizard-like body and bifid tail, strongly carved in complete openwork.

The box, of circular form with smooth surface, has a low foot surrounded by a prominent rim, and a cover at the top carved in relief

The material of the three pieces is translucent, homogeneous and compact, and shows inclusions of the black metallic substance—apparently chromic iron—which is so frequently found in nephrite. When a strong light is allowed to pass through the urn the mass is seen to be made up of an almost emerald-green substance enclosed in a yellow, almost salmon, color, the black included particles being in the olive-green magma. By transmitted light the cover is almost entirely moss-green. Throughout the centre of each of the two parts of the box there is a yellow sinewy vein, with large veinings of a dark olive-green and the darker metallic substance which is so frequently found in nephrite. The vase is made up of a dark olive-green magma with inclusions of a slightly yellower olive-green.







## 678 CHIEN-LUNG (1736-1795)

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

Dimensions:  $2.16 \times 1.97 \times 1.22$  inches.  $5.5 \times 5.0 \times 3.1$  centimetres. Weight: 3.590 ounces. 101.797 grammes  
 Specific gravity: 2.9955; hardness: 6.5. *Nephrite*  
 Color: Spinach-green with mottlings of lighter green

A small snuff-bottle in the form of a miniature flattened jar, swelling at the shoulders, narrow at the base, and constricted at the neck. The decoration, which presents a basket-like appearance, consists of a number of the jointed stems of the bamboo or some reedy plant placed close together and held in place by smooth foliated bands

which surround the base and the shoulder. It is of solid appearance, but has been carefully hollowed out inside and polished.

The material is homogeneous and compact, and contains black inclusions which are apparently chromic iron.

## 679 CHIEN-LUNG (1736-1795)

ARTIST'S BRUSH-HOLDER (*Pi Tung*)

CHINA

Dimensions:  $8.0 \times 8.66$  inches.  $20.3 \times 22.0$  centimetres. Weight: 11 pounds 15.840 ounces. 5438.560 grammes  
 Specific gravity: 2.9970; hardness: 6.5. *Nephrite*  
 Color: Translucent brilliant dark green, changing to light greenish-gray with dark brown and russet

A magnificent brush-holder of imposing size and highly finished design, fashioned in the form of a wide cylinder, carved in the boldest relief, and pierced with openwork; with the rim below resting on three low, broad feet of scroll outline projecting outward.

The wooded mountain scene represents the "Orchid Pavilion," a favorite subject in Chinese art. It is the Lan Ting, or "Orchid Pavilion," in the mountains near Hui-chi in the province of Cheh-kiang, where a celebrated party of convivial poets used to meet during the fourth century, in the time of the Eastern Chin dynasty, which flourished from 317 to 419 A.D. It was here that, inspired by the beauties of the mountain scenery which surrounded them clad in the verdure of spring, and exhilarated by the frequent cups of hot wine which delight Chinese poets, they used to compose their verses. The renowned calligrapher Wang Hsi-chih was one of the party, and wrote out the poetical compositions in a style which remains to the present day a model for the clever writer. The verses may be seen engraved in his handwriting upon stone slabs in many cities throughout the empire. The impressions, or rubbings, taken from these stones are very popular, and many volumes have been written upon the inscriptions of the "Orchid Pavilion." The spring festival of the third day of the third moon, which is still kept up, was inaugurated at this time, and it is this inauguration which occurred in the ninth year of Yung-ho (353) that we have before us. The mountain landscape extends over the whole circumference of the cylinder. Gigantic pines occupy the background, stretching over a falling torrent which splashes in waves below. Among the other trees with which the scene is filled, the dryandra, willow, and poplar, as well as the weeping-willow with its drooping branches, may be distinguished by their foliage. All round near the top are leafy groves of bamboo enveloped in rolling clouds, with the jointed stems standing in serried ranks, cut and undercut so that the interstices extend right through. Across the middle of the scene, in the foreground, winds a flowing stream, its current being indicated by wavy lines in the water. The field is filled with figures, standing or seated in groups upon the rocky banks of the little river. These are seen at once to belong to two categories,—the venerable figures, fourteen in number, arrayed in flowing robes with loosely hanging sleeves, being the poets; while the boyish figures, with their hair in two side tufts and dressed in short jackets, are the attendants who carry the cups of wine. The

"Orchid Pavilion" is on the right—a square building supported on piles, over the water, with a carved balustrade and four pillars upholding the roof. The sides are open, showing Wang Hsi-chih seated inside, busily writing, with a pot full of brushes on the table beside him. A boy carrying a cup of wine is hurrying along the covered corridor which leads to the pavilion. The poets grouped upon the rocks are either composing or reciting verses, and have generally their brushes and ink-pallets lying on the ground beside them. Some are reading to others near them from scrolls held unrolled in their hands. On the far left are two walking together under the trees, coming to join the festive scene. At the top of the picture, in the middle, one of the boys is squatted upon a detached rock under the shade of bamboos, behind a large flat-bottomed jar from which he is ladling wine into cups. Two of the cups stand on the rock beside him, and a third has just been taken off by a second boy below, who is leaning over the bank in the act of launching it in the stream. Some other cups are seen floating down with the current, each supported upon a little wooden platter, to be intercepted by other boys waiting on the banks further down and carried to their masters. To the right, behind the pavilion, another boy is standing by a wine-jar near a table, upon which he places the cups as he fills them, ready to be carried in the ordinary way by other sprites who are depicted descending the steep mountain path with trays in their hands.

A collection of ancient scroll pictures in China is hardly complete without one of this curious scene, and it is interesting to see it carved in such an enduring material as jade. What more fitting subject for this brush-pot of a calligrapher could have been selected? This one was found, in 1860, in one of the emperor's rooms within the Summer Palace at Yuan Ming Yuan, by Colonel Schmidt, Chief of Staff to General Comte de Montauban, afterward Duc de Palikao, and was presented by the colonel, on his way home through Shanghai, to Mr. Albert Heard, from whose possession it passed into this Collection.

In view of its great size, this cylinder is remarkable for the compactness of the material. On one side there is a large patch of a grayish-brown, almost horn-like substance; but the black metallic substance (perhaps chromic iron) which is occasionally found in nephrite is not as pronounced as in some other pieces.

## 680 CHIEN-LUNG (1736-1795)

SACRIFICIAL TRIPOD (*San Hsi Ting*)

CHINA

Dimensions:  $9.5 \times 9.47$  inches.  $24.1 \times 24.0$  centimetres. Weight: 6 pounds 7.411 ounces. 2933.688 grammes  
 Specific gravity: 2.9736; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A sacrificial vessel with a globular body mounted upon three upright feet, two erect curving handles, and a cover with three animals

reclining upon it. It derives the name of *San hsi ting*, "Tripod with three sacrificial victims," from this last fact, and is copied from one





name to the tripod. The top of the handle is engraved with three similar grotesque heads flanked by interlacing scrolls so as to form a decorative band round the rim.

It may be noted that the body, handles, animals, etc., are all cut from one solid piece of jade, which is translucent and compact, and by transmitted light shows numerous veinings of small black metallic specks, apparently chromic iron.

of the bronze vessels used in the ancestral temples during the Former Han dynasty, which flourished from 202 B. C. to 5 A. D., as figured in the "Po ku t'ou," the well-known illustrated catalogue of ancient bronzes.

The body is decorated with a broad band, interrupted by the handles, enclosing highly conventional scrolls of monsters' heads in slight relief upon a ground of fret pattern. Below this it is encircled with a formal band of palm leaves ornamented with scrolls. The three cylindrical legs spring from the mouths of gaping grotesque heads which project outside at the points of the junction between the body and the legs. The broad erect handles, of oblong flattened form, hollow in the middle, curve up from the middle of the body, and outward again at the tip, and are joined at the rim about the middle by the intervention of a horizontal rod. The cover is encircled with a similar scroll band, succeeded by narrow concentric plain bands above until it culminates in a ringed handle with flaring edge. Upon the shoulder of the cover recline at equal intervals three animals of nondescript character, with upright ears and a single horn growing from the middle of the forehead in the traditional Chinese form of the rhinoceros (*hsi*), representing the three victims which give its



681  
682

### SCREENS (*Ch'a P'ing*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 11.56 × 7.97 × .56 inches. 29.3 × 20.2 × 1.4 centimetres.

Weight: 681=4 pounds 11.371 ounces. 2136.740 grammes

682=4 pounds 11.097 ounces. 2128.960 grammes

Specific gravity: 681=3.0445; hardness: 6.5. *Nephrite*

682=2.9753; 6.5. *Nephrite*

Color: Spinach-green with a mingling of yellowish-green and black clouds

A pair of large oblong rectangular panels carved in relief, so as to stand upright, with mountain scenes of Taoist character intended to represent the abode of the divinities. The Chinese name for the two combined is *Lou tai tien ko—Fu kuei ch'ang ch'un*, "Pavilions, Towers, Halls, and Temples of Riches, Honor, and Eternal Spring."

The first picture has in the middle a lofty mountain rising into the clouds, surrounded by other peaks through which a torrent runs, making several waterfalls. The valleys are filled with pines and other trees, and the gorges with temple buildings. A high stone staircase leads up to the terrace of the lowest building, which has an altar inside with an incense-burner upon it, and a little pavilion is perched high up near the top of the mountain. In the middle of the scene are two figures of old men, in flowing robes, standing near the overhanging



edge of a precipice as if admiring the beauty of the surroundings. One of them holds up a branch of the tree-peony, the floral emblem of riches and high rank, hence often called *Fu kwei hua*, "The flower of riches and honor."

The second picture is a similar mountain retreat with pine trees and temple buildings. A river runs through, with its rocky banks connected by a bridge. An aged figure which represents Shou Lao, the god of longevity, stands upon the bridge, leaning upon a long

knotted staff. A youthful attendant stands near by, holding a basket which he has just filled with the sacred fruit of "Eternal Spring," gathered from the peach tree which is growing near at hand. A tripod brazier is seen in the background upon the summit of a rock, with the smoke of the incense rising in a high thin perpendicular column, symbolizing the peaceful calm of the surrounding scene.

The material is translucent and homogeneous, with inclusions of a black metallic substance which is evidently chromic iron.

683 CH'EN-LUNG (1736-1795) ARTIST'S BRUSH-HOLDER (*Pi Tung*)

CHINA

Dimensions: 7.03 × 7.88 inches. 17.9 × 20.0 centimetres. Weight: 9 pounds 4.646 ounces. 4214.120 grammes  
Specific gravity: 2.9995; hardness: 6.5. *Nephrite*  
Color: Spinach-green with a few mottlings of a lighter shade

A cylindrical brush-holder of fine proportions finely sculptured in very bold relief with a rocky mountain scene which includes waterfalls, trees, an imperial double-roofed pavilion, and a number of figures representing the members of a tribute-bearing mission to the "Son of Heaven" from some Indo-Chinese country: a common motive in Chinese art. Near the head of the procession is the envoy, marked by the *ju-i* sceptre which he bears, and accompanied by a personal attendant bearing a long staff. Then follows a peculiar two-wheeled vehicle laden with precious things, a lion with its conductor flourishing a brocaded ball, and an elephant carrying a tub with a rare plant growing in it, attended by footmen carrying vases, one of which contains a branching coral. High on an upper ledge appear two deputies who, carrying presents in their hands, seem to have preceded the main body of the cortège and are approaching the balustraded palace grounds, while from the opposite side two mounted officers have just issued to meet and welcome the mission. The sculpture is of the highest order and bespeaks a vigorous period of lapidary work.

The vessel contains: A large artist's brush, mounted in a plain handle of ivy-green jade. A *ju-i* sceptre fashioned in the usual form, with designs of fruit, flowers, and symbols carved upon it in slight relief. Upon the head, within a scrolled border, there is a bunch of three fruits with a bat. The three-fruit design, commonly called *San to*, "Three abundances," consists of a peach with a floral spray for "abundant longevity," a bursting pomegranate for "abundant progeny," and a Buddha's-hand citron for "abundant happiness." The handle is decorated with a flowering bulb of jonquil and a spray of bamboo; the hilt, with a bat, sacred fungus, and two palm leaves. A massage implement, with four rock-crystal and seven carnelian rings strung upon an engraved gilt loop ending in dragons' heads, which is mounted upon a crystal handle carved with bands of fret and having a movable crystal ring on the end.

The material of the cylinder is translucent, homogeneous and compact, and by transmitted light is seen to belong to the class of nephrite known as "puddingstone jade," presenting the appearance of white masses resembling quartz pebbles, varying in size from one eighth inch to two inches across, embedded in a deep sea-green magma. Intermingled with these are small, almost black, markings. The inclusions of the black metallic substance, apparently chromic iron, so characteristic of nephrite are also present.

The sceptre, which is quite free from inclusions and imperfections of all kinds, shows a faint vein-structure running parallel with the length of the sceptre, the veining being a trifle darker.

In the centre of the brush-handle there is a veining, and in the lower end there is a black inclusion.





684

LARGE LONGEVITY MOUNTAIN (*Ta Shou Shan*)

CHINA

CH'IENT-LUNG (1736-1795)

Dimensions: 10.56 × 17.97 × 5.31 inches. 26.8 × 45.6 × 13.5 centimetres. Weight: 38 pounds 2.831 ounces. 17316.700 grammes  
 Specific gravity: 2.9970; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A huge natural boulder carved in bold relief with openwork in the form of a mountain mass to represent the "Hills of Longevity," the Taoist paradise and abode of their divinity Shou Lao. The mountains are clad with trees, among which the pine is especially conspicuous, and wild-vine creepers hang from the rocks. Clouds envelop the scene above and streams flow across below, a mountain torrent dashing down at the back in waterfalls. In front a pillared temple with open sides occupies a prominent position, standing on a rocky platform. Built upon a stone terrace with steps in front, surrounded by a carved balustrade, it has eight pillars, four to support

two in front have symbols in their hands—one the precious vase of fertility, filled with millet; the other the double-gourd, the magic source of all kinds of felicity. Five bats are seen flying above the mouth of the gourd, as if they had just issued from it. An attendant sprite follows behind with a staff. On the back of the mountain we see the god of longevity standing on the rocks, near two huge pines, under a canopy of trailing vine. He is accompanied by two attendants, one carrying a branch of peony blossom thrown over his shoulder, the other holding a scroll in his two hands, the sacred scriptures of the Taoists. The rest of the scene is filled with the attributes of the god: a stork



the lofty roof and four to uphold a second roof over the veranda which encircles the central hall. Near the temple grows a peach tree laden with gigantic specimens of the sacred fruit—the "tree of life" of the Taoists. A road cut in the mountain-side skirts the scene below, coming through an archway on the right, crossing a bridge with stone balustrades, and ending in a narrow pass on the left. Along this road are walking five aged figures, representing the Genii, or Rishi, on their way to worship the god of longevity (Chün Hsien Chu Shou). They are accompanied by three youthful attendants. One old man who is just approaching the scene stands on the bridge, leaning upon his long staff, which has a dragon's head carved at the top, caressing his long beard, and gazing round as if to admire the scenery, while his attendant sprite stands still behind. The next two aged hermits are looking in rapt astonishment, with uplifted hands, at a dish of peaches which a boy is holding up before them. The

standing behind him while its mate is flying down through the air, a pair of deer in a rocky gorge, flowering branches of chrysanthemum, and plants of *ling-chih* (the sacred fungus) scattered all round.

This piece is remarkable for its size, the homogeneity of its material, its color, and its sculpture. One cannot help admiring the courage, the patience, and the perseverance of the Chinese lapidary—we do not know his name—as he started in to execute the bold design he had evolved, a task requiring thousands of days to complete. It was inevitable that such a masterpiece should be assigned a prominent place in one of the halls of the Imperial Summer Palace at Peking, whence it came.

The material shows a vein-structure perpendicular to the mass itself, which is a dull green enclosing spots that are lighter and more brilliant. The veining is marked by being a trifle more brown, probably due to inclusions of oxide of iron (limonite).

685

CH'IENT-LUNG (1736-1795)

ARTIST'S BRUSH-HOLDER (*Pi Tung*)

CHINA

Dimensions: 5.75 × 5.97 inches. 14.6 × 15.2 centimetres. Weight: 3 pounds 14.964 ounces. 1785.020 grammes  
 Specific gravity: 3.0004; hardness: 6.5. *Nephrite*  
 Color: A mixture of pear-leaf-green, very dark green, and spots of light greenish-gray

A cylinder, carved in the usual form in bold relief with sharply defined detail, covered with a mountain landscape representing the Taoist paradise. The base is carved with a rocky design encircled

by a plain rim from which proceed five low broad feet of scrolled outline. A temple, in the ordinary form of a square pavilion with a double roof supported by pillars, stands upon a terrace, representing



the abode of Shou Lao, the god of longevity, who is standing outside upon a rock and leaning upon a long staff, with an attendant carrying a sacred peach with leafy branch attached, and behind a crane standing upon one leg. Huge pines overshadow the scene, and a clump of sacred fungus with blades of grass sprouting through is growing underneath. On the other side we have a garden scene, with trees and water, a river crossed by a bridge, a second pavilion standing in the background near a grove of bamboos surrounded by a fence. Through the terraced grounds are walking two aged figures, each carrying a sacred peach, representing two Taoist hermits, or Rishi, coming to worship their special divinity. They are preceded by a youthful attendant with a sacred fungus in his hand. These two figures are supposed to be those of T'ai Kung and Po Yi, the "Two Venerable Men" (Êrh Lao), who lived in the twelfth century B. C. and welcomed the advent of the founder of the Chou dynasty.

The vessel contains: A large brush mounted in a plain handle of white jade ornamented at the base with a disc of lapis lazuli. A ju-i sceptre, with a fungus head of rust-colored tourmaline-rubellite from the Shan Mountains—a much-prized stone called by the Chinese "ox-eye." This is mounted in a plain curved handle of white jade, to the surface of which are affixed four Chinese characters carved out of rich lettuce-green jadeite, reading, *Pi ting ju-i*, "All shall be fixed as you wish." The sceptre is perforated at the end for a tassel. A massage-implement (*T'ai-p'ing-ch'ê*, literally "Chariot of Great Peace"), made up of five round, flat, perforated discs, two of which are nephrite, one red agate, one jadeite, and one lapis lazuli, mounted on a gilded frame with a smaller disc of jade between each so as to revolve. This frame is inserted in a white jade handle with light-greenish tint, carved in relief with a blossoming branch of plum (the so-called hawthorn) with lapis-lazuli rims at the two ends.

The material of the cylinder is subtranslucent, and transmitted light shows that it belongs to the "puddingstone" variety of jade, being made up of different-colored particles, pale yellow-green and brownish-green, from five to twenty millimetres in diameter, included in a darker green magma. By intense light it shows vivid, almost emerald-green spots included in an almost salmon-colored material. Throughout both of these colors are seen many small black metallic specks which are either chromic iron or magnetite. The "puddingstone" character of this piece is apparent to the eye, but when examined under the glass it changes from a dull green to a most brilliant color-combination.

The material of the sceptre is homogeneous and compact, with small white opaque inclusions that are apparently only another form of nephrite. The tourmaline of the head is an immense piece for this rare mineral.

The stand is of gilded bronze, with openwork designs decorated in *champlevé* enamel of two shades of blue, and is of the Ch'ien-lung period.

This is one of the pieces taken at the looting of the Yuan Ming Yuan, or Imperial Summer Palace, during the Anglo-French operations against Peking in October, 1860. The palace, a few miles to the northwest of the city, is described in the journal of Sir Hope Grant,<sup>1</sup> commander of the British forces on that occasion, as "beautifully situated amidst gardens and woods, and a range of large suburbs in front." "We passed the park walls," says Sir Hope, "by a fine old stately gateway, and proceeding up an avenue came to a range of handsome dwellings roofed over with yellow tiles turned up at the ends, Chinese fashion. In different parts of the grounds were forty separate small palaces, in beautiful situations. . . . The principal palace was filled with beautiful jade-stones of great value, and carved in most elaborate manner." The looting by the French had already begun, and, Sir Hope says, "It was pitiful to see the way in which everything was being robbed. . . . One room only in the palace was untouched. . . . The walls of it were covered with jade-stones, and with ornaments of various descriptions."



686

BOWL WITH TWO HANDLES (*Ta Yuan Hsi-tzū*)

CH'EN-LUNG (1736-1795)

CHINA

Dimensions: 3.0 × 13.16 inches. 7.6 × 33.4 centimetres. Weight: 3 pounds 14.994 ounces. 1785.880 grammes  
Specific gravity: 2.9739; hardness: 6.5. *Nephrite*  
Color: Spinach-green with black specks and mottlings of brown clouds



A large circular shallow bowl with a flat base surrounded by a prominent rim. The two handles, of square section and rectangular outline, with movable rings suspended from them, spring from the bodies of bats which spread their wings horizontally so that the heads and wings rest upon the rim of the bowl. This is decorated outside with a broad band, carved in relief, composed of interlacing sprays of conventional flowers and leaves. The inside is ornamented in relief with a branch of the tree-peony, with small leaves and flowers curled in a circle, supporting a pair of fish with interlacing tails, looking like bull's-head fish, a broad-headed species of *Pimelodus* with four cirri, called *nien yü* in North China, where it abounds.

<sup>1</sup> Incidents in the China War of 1860. Compiled from the Private Journals of General Sir Hope Grant, G.C.B., Commander of the English Expedition, by Henry Knollys, Captain Royal Artillery. London, 1875, pp. 127-129.



The Chinese are fond of using a pair of fish to decorate the bottom of a water-vessel, as suggestive of propitious thoughts, and also as appropriate to the utensil, especially when associated, as they generally are, with water-plants. Bronze vessels more than two thousand years old are constantly found with this ornament, and it is frequently seen in the bottom of little moulded saucer-shaped dishes of Sung dynasty porcelain.

The material is compact and homogeneous. Transmitted light shows a mixed mottling of a rich pale green, a large rich-brown ferruginous stain on the base and side, and the presence of a black metallic substance, apparently chromic iron.

687

BOWL WITH TWO HANDLES (*Ta Yuan Hsi-tzu*)

CHINA

CH'IENT-LUNG (1736-1795)

Dimensions: 3.34 × 11.81 inches. 8.5 × 30.0 centimetres. Weight: 5 pounds 9.472 ounces. 2536.320 grammes  
Specific gravity: 2.9511; hardness: 6.5. *Nephrite*  
Color: Spinach-green lightly flecked with black

A large shallow bowl with a rounded base resting upon five broad feet of scroll outline. The body is encircled by a broad sunken band carved in relief with conventional floral sprays derived apparently

rated with a circular design, carved in bold relief, consisting of four formal flowers in a ring around a prominent cross-hatched button, which projects in the middle, surrounded by a reticulation of inter-



from the peony. From the middle of this band spring two handles of square section and rectangular outline, from which are suspended movable rings. They are surmounted by bats, emblems of happiness, solidly modelled in openwork of natural form so that the heads and wings rest upon the rim of the dish. The bottom inside is deco-

lating leaves belonging to the same conventional form as that upon the band outside.

The material of the piece is subtranslucent, compact and homogeneous, with inclusions of a black metallic substance, apparently chromic iron.

688

CH'IENT-LUNG (1736-1795)

ROUND SCREEN (*Yuan Ch'a P'ing*)

CHINA

Dimensions: 11.81 × 1.22 inches. 30.0 × 3.1 centimetres. Weight: 9 pounds 4.822 ounces. 4219.020 grammes  
Specific gravity: 3.0136; hardness: 6.5. *Nephrite*  
Color: Ivy-green mottled and clouded with green and black

A large round panel, of unusual thickness, carved on one side in very high relief with a picture representing Bôdhidharma, the first of the Buddhist patriarchs of China (but the twenty-eighth Indian patriarch), crossing the waves upon a reed pulled from a clump on the adjoining bank. An imperial inscription in verse is engraved above and filled in with gold. On the other side of the panel is an engraved picture with gold outlines, a copy of a sketch of Golden Island, the well-known picturesque Buddhist retreat in the Yangtsze River near Chinkiang, made by the Emperor Ch'ien-lung himself during his visit in the year 1765. This is shown by the ode composed by him on the occasion, engraved above the picture in the imperial autograph and accompanied by the imperial seal.

The figure of the celebrated Buddhist monk stands out in the middle of the scene, boldly modelled with prominent features in an attitude and pose copied doubtless from an old picture in the temple sanctuary. He stands erect upon the reed, with feet bare, the body covered with a long cloak which also covers the head. To the staff which he carries in his right hand and resting upon his shoulder is slung a packet containing manuscripts and a bundle enclosing, the story says, the famous alms-bowl of Buddha. To his left hand, held up in a formal way to show the "jewel of the law" between the thumb and finger, is suspended a chowry or fly-brush. The reed floating on

the surface of the water stretches right across, with its paniced head still attached. A clump of similar reeds is carved in relief, growing on the bank behind. The waves roll into curling crests all round, as if agitated by the wind, in marked contrast to the calm composure of the central figure. The inscription, engraved above in seven vertical lines, reads:

"Upon a single reed floating over the waves,  
Whether coming or whether returning,  
With rapt gaze and hands folded in sleeves,  
He bides tranquil and undisturbed.  
As a means to cross the broad river  
A reed was sufficient for his power:  
No other could perform such a deed.  
We bow in adoration to the holy monk!"

The two characters which follow—*Yü ti*—mean, "Composed and written by the emperor."

The reverse side of the panel is engraved with the picture of a rocky island with its slopes crowded with Buddhist shrines. Water stretches all round, represented by lightly touched spiral waves, with a few small rocks in it near the shore and three tiny junks under full sail crossing the river in the far distance. The shore of the island is fringed with palisades and bridges, terraced walls of varied forms surround the buildings in the temple courtyards, and two-storied



一草橫江為  
米為玄澄目  
袖手澹然子  
慮江三渡所  
筆以是餘兩  
不可得稽首  
聖僧也





pavilions and towers occupy intervening spaces. Pines, willows, and palms may be distinguished among the trees, the foliage and under-

graved, the second cut round so as to stand out in relief. Those are the private seals of the Emperor Ch'ien-lung, who reigned 1736-1795.



growth being indicated by dotted lines as we ascend the steep side of the hill, which is conical in form with a broad top covered with temple halls and pavilions. The summit is crowned by a tall pagoda with six sides, which has bells hanging from the corners of the eaves of each tier of the five roofs, and an elaborate jewelled spire at the apex. The imperial ode, in rhyming verse of eight stanzas engraved above in gilded characters, reads:

"The summit of the pagoda, crowned with its pointed spire,  
Has the azure vault of heaven above—naught else so high as it.  
The pilgrim sees here a peerless evidence of Buddha's sacred law,  
Which he cannot approach without feelings of awe and reverence,  
Although the picturesque scene, the river and the hill, are  
the same as of yore.  
We will venture to add to our old verses yet another measure,  
Though in scholarly lore we cannot come near the poetry of  
T'ung-po,  
Whose old rhymes we have borrowed once more to compose  
these stanzas."

Upon the left, on the lower level, are engraved the lines:

"In the cyclical year *yi yu* (A. D. 1765), in the spring, during our journey to the south, we ascended the Golden Hill (*Chin shan*), climbed to the top of the pagoda, and composed, for the third time, these stanzas, ending with the same old rhymes as before. We also drew a sketch of the view, which we presented on leaving to the Temple Hall, Miao Kao T'ang, to be left there as a memento of our enjoyment of the prospect."

The two characters below, *Yü pi*, meaning, "Penned by the emperor," are followed by two characters in antique script enclosed in square panels to reproduce the seals *Ch'ien* and *Lung*, the first en-

Golden Island was plundered by the Tai-ping rebels after their capture of the adjacent walled city of Chinkiang Fu, at which time the temples are said to have all been destroyed, the rebels having shown their usual antipathy to Buddhism. This interesting panel was no doubt found in the temple to which the emperor had presented it, and afterward carried away to find a new haven of rest here.

Bôdhidharma was a kshatriya by birth, son of a king of southern India. He succeeded to the Buddhist patriarchate in the year 457, on the death of his master, Prajnatara, the twenty-seventh patriarch. In the year 520, impelled probably by persecution, he set out for China, as had been foretold by his master, arriving at Canton on the twenty-first day of the ninth month of that year. After a brief stay there, he proceeded northward to Loyang (on the left bank of the Yellow River in the present province of Honan), the residence of the emperors of the Northern Wei, a Tartar dynasty which favored Buddhism. Bôdhidharma was an ascetic who decried book-learning and book-reading as a means of salvation, and became the founder of the contemplative school of Buddhism. At Loyang he sat in a rapt meditation for nine years with his face to the wall, and thus received the name of "the wall-gazing Brahman." He is supposed to have died in 529, but tradition says that he reappeared in Japan in the year 613. Both the Chinese and the Japanese have treated his memory somewhat familiarly, and a grotesque but common toy of pasteboard and clay, with broad rounded base properly ballasted, representing a seated monkish figure called *Daruma San* ("Mr. [Bôdhi]dharma") by the Japanese, and *Pan-puh-tao* ("Knock but not overturn") by the Chinese, commemorates his wall-gazing persistency.



689 CHIEN-LUNG (1736-1795)

LARGE FISH-BOWL (*Ta Yü Kang*)

CHINA

Dimensions: 7.59 × 29.97 × 16.94 inches. 19.3 × 71.0 × 31.8 centimetres. Weight: 134 pounds 11.626 ounces. 61112.000 grammes  
 Specific gravity: 2.9618; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A large massive bowl, or eistern, of oval form and flattened base, with the bulging sides excavated inside so as to leave the rim defined by a plain rounded band and form a capacious interior capable of holding eighteen quarts of water and intended for keeping goldfish in. It is decorated outside with two pairs of imperial dragons rising from the sea into the sky, most vigorously designed and deeply carved, and forms a magnificent example of the artistic work produced in the Imperial Jade Manufactory (*Yü Tso*) in the palace at Peking during the reign of Ch'ien-lung, as shown by the inscription engraved inside in the handwriting of the emperor himself. The base is entirely covered with carving representing waves of the sea,

bowl. The remainder of the surface of the exterior is filled with banks of clouds in superimposed rolls, through the interstices of which appear on either side the heads, limbs, and portions of the bodies of a pair of monstrous dragons striving to grasp the jewel of omnipotence. This is represented on the right, near the top, as a round ball with rays of effulgence streaming out as if it were whirling through the air. The dragons exhibit the conventional lineaments of the imperial type, having two long tuberculated horns, bristling hair, and long streaming mustaches, gaping mouths, staring eyes, scaly serpent-like bodies with a row of dorsal spines, and four feet each armed with five claws. The carving is of unusual vigor,



starting from the centre and radiating in spiral curves, gradually widening as they approach the circumference. Here they lift up curling crests and beat against the feet of the mountains, which stand up in low relief in the middle of the two longer sides of the

extending to a depth of one and a half inches (3.8 centimetres), and the imperial five-clawed dragons stand out in very high relief.

The inscription, engraved inside in twelve vertical lines of large characters an inch long, is a poem in six double-rhyming stanzas,



written by the emperor in the spring of the year 1774:

"The colossal block was brought as a tributary offering from Khotan,<sup>1</sup> To be fashioned by skilful hands into a wèng-shaped bowl.<sup>2</sup>

"It has been carved with clouds brought down from the vault of heaven, And with dragons rising in their might from the depth of the abyss.

"The design is most appropriate and of marvellous execution; The material gives out its peculiar clear, resonant note.

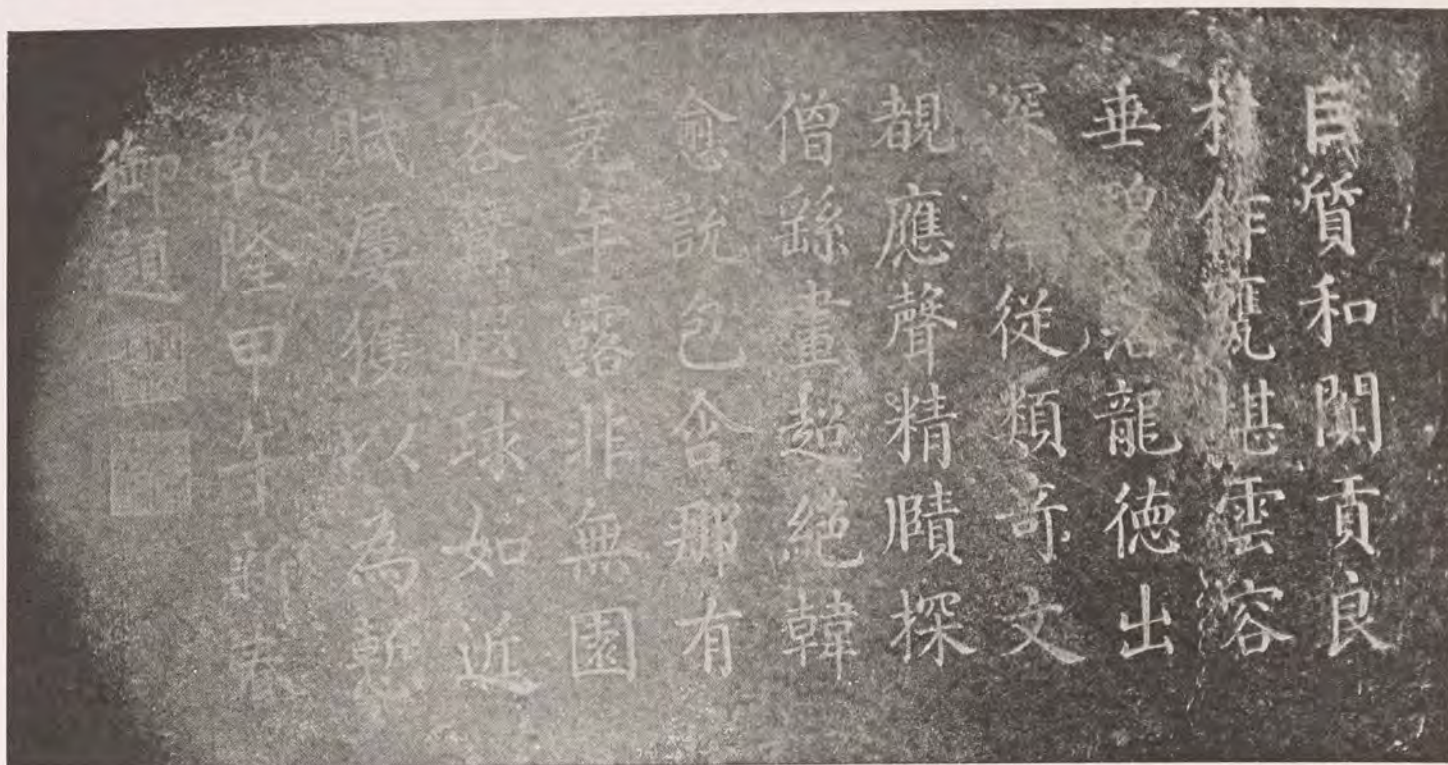
"How hard it is to rival in genius the pictures of Sêng-yu,<sup>3</sup> How difficult to add a new line to the works of Han Yü!<sup>4</sup>

"Where is the miraculous dew of the ancient Emperor Yao?<sup>5</sup> We have only, as it were, one of the silkworms of Yuan-k'e.<sup>6</sup>

"Precious jade<sup>7</sup> arrives from afar, as if it were a near production, And comes in such large quantity that we feel really ashamed."

"Written by the Emperor Ch'ien-lung in the first month of spring of the cyclical year *chia-wu*."<sup>8</sup>

Two seals are appended: the first engraved within a square containing four characters in antique script—*So pao wei hsien*, "What I prize are worthy men";<sup>9</sup> the second engraved in relief within an



intaglio square, *Ch'ien-lung yü pi*, "Imperial autograph of Ch'ien lung."

This unique object is the largest piece of finely carved jade known to exist. It was taken from the Summer Palace by the Chinese after its looting by the Anglo-French forces in 1860, being too heavy for the latter to take away with them. It is a well-known fact that Chinese plunderers were far more benefited by the looting than were the allied forces, as the latter took only precious jewels, metals, and other art objects easy of transportation. This piece was afterward taken to Paris by T'ien-pao, the Chinese dealer in art objects, where it was disposed of to a gentleman in London, from whose collection it was obtained by its present owner.

# 690 CHIEN-LUNG (1736-1795)

## LARGE OVAL BASIN (*Ta Hsi*)

CHINA

Dimensions: 4.50 × 17.53 × 12.53 inches. 11.4 × 44.5 × 31.8 centimetres. Weight: 33 pounds 6.965 ounces. 15165.930 grammes  
Specific gravity: 3.0106; hardness: 6.5. *Nephrite*  
Color: Spinach-green mottled with light and dark brown

做 乾 大  
古 隆 清

A shallow basin of oval form, with flat bottom and nearly upright sides ending in a plain rounded rim. It is made to hold water for washing the brushes of an artist or a writer, and is decorated with a subject appropriate to its use, executed in the strongest and boldest style, so that the details stand out in surprising relief. The basin appears to be immersed in waves, which are carved in scrolls encircling the base and stretching up all round over the sides so as to lift their curling crests above the level of the rim. At one corner is the figure of a boy, carved in full detached relief, floating upon the water

and lifted by the waves so as just to be able to see over the edge of the basin. He is dressed in ancient costume and grasps in his right hand a magic wand or sceptre (*ju-i*) and in his left a large jade ring, symbols of riches. At one corner of the dish is a winged fish-dragon (*yü-lung*), lifting its unicorn head upon the rim, along which the long mustaches spread and curl round at the tips. The remaining corners of the basin are occupied by ordinary fish, like the sturgeon, carved in the same strong relief, swimming through the water and lifting their heads above the waves. The story is that any scholar lucky enough to catch a glimpse of a fish that has been transformed into a dragon is certain to find his name in the "Dragon List"—the

<sup>1</sup> Khotan, written here under the modern form Ho-tien, is the ancient walled city which gives its name to the province of Khotan in the south of Chinese Turkistan. This includes the northern slopes of the K'un Lun Mountains, the rivers of which are so rich in jade that they have for centuries furnished the chief supply of this valuable mineral to China.

<sup>2</sup> The *wèng* is a large jar of ovoid form with constricted mouth, originally made of earthenware, used for holding water and for rearing goldfish.

<sup>3</sup> Chang Sêng-yu, a famous artist who flourished about the middle of the sixth century A. D., and was employed by the Emperor Wu Ti, the founder of the Liang dynasty, as a painter of Buddhist pictures. He was celebrated for his paintings of dragons, which he delineated with such wondrous force that they seemed instinct with life. We are told that on one occasion, when he put on the finishing touch to a dragon by dotting in the pupils of the eyes, a black cloud suddenly arose from the paper, and, filling the room, sent forth peals of thunder, while the wondrous creation of the pencil rose up and, bursting through the wall, vanished in the sky.

<sup>4</sup> Han Yü, who lived 768-824 A. D., was one of the foremost statesmen, philosophers, and poets of the Tang dynasty. In the year 819 he presented his famous remonstrance to the Emperor Hsien Tsung against the public honors with which he had caused an

alleged relic of Buddha to be conveyed to the palace. In consequence of this he was banished to fill the post of governor to the remote and then semi-barbarous region of Ch'ao-chou (in the modern province of Kuangtung). Here he civilized the rude inhabitants, and is said to have expelled from their rivers by the force of his pen a monstrous dragon which was devastating the land.

<sup>5</sup> The emperor who stands at the dawn of Chinese history as a model of all wisdom and sovereign virtue. He is said to have possessed a bowl (*wèng*), handed down from the fabulous ruler Huang Ti, which used to become miraculously full of dew when the empire flourished under a good ruler, otherwise remaining dry.

<sup>6</sup> Yuan-k'e, a famous rearer of silkworms which are said to have changed into chrysalids, of many colors, as large as wèng-bowls.

<sup>7</sup> *Ch'iu* is the classical name of a kind of precious jade.

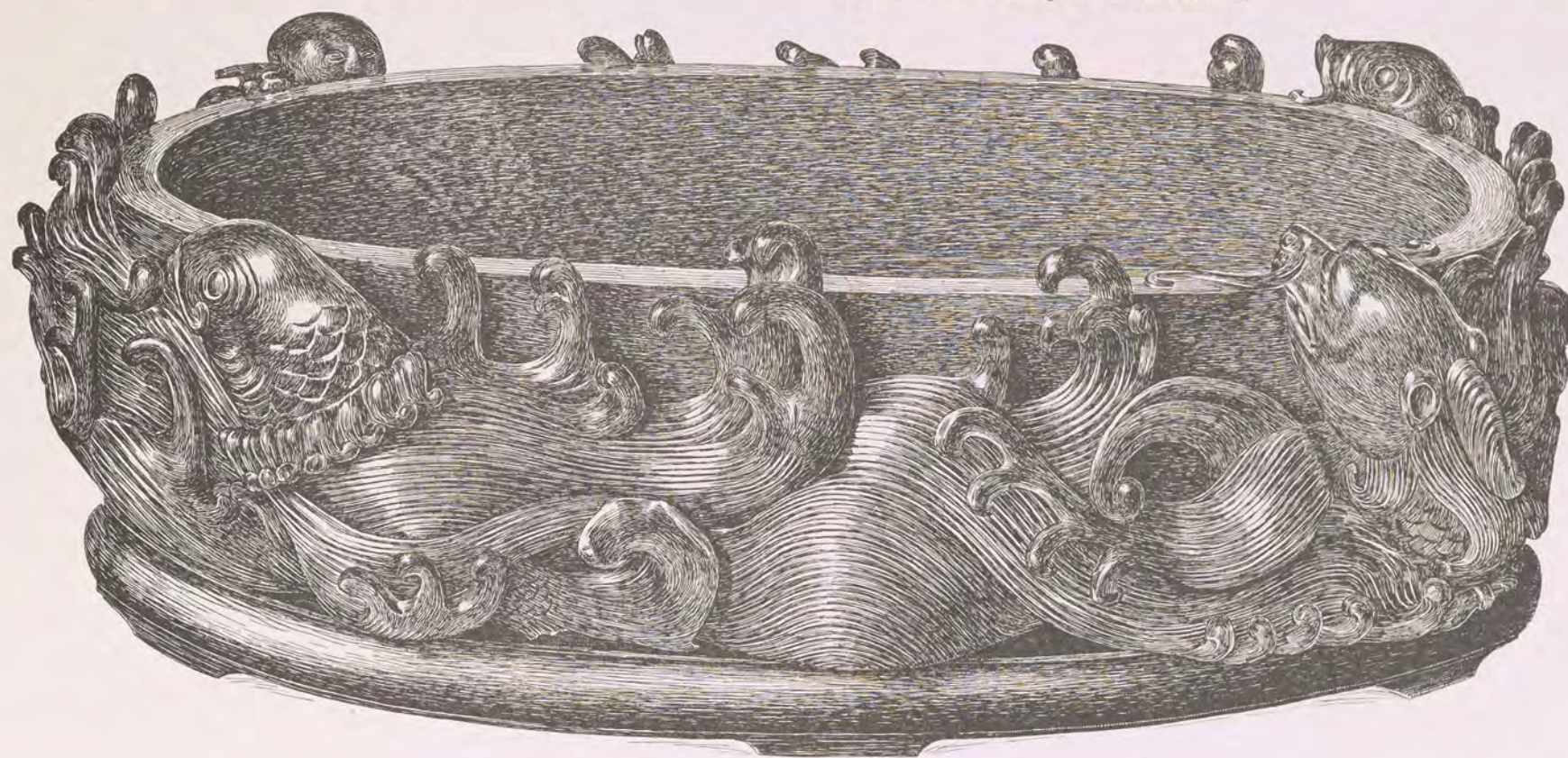
<sup>8</sup> 1774 A. D.

<sup>9</sup> A motto quoted from the ancient Book of Annals (Shu Ching), Part V, Book V, par. 8-, where the prince declares that he does not value precious things from afar, but that what he prizes are worthy men as giving repose to his people. (See Legge's translation of the Chinese Classics, Vol. III, Part II, p. 349.)



roll of successful graduates at the competitive literary examination which every candidate for office in China must pass as a first step. The mark engraved below in six old-style characters is *Ta Ch'ing Ch'ien-lung fang ku*, meaning, "Copy of an antique made in the reign of Ch'ien-lung of the great Ch'ing dynasty."

The material is subtranslucent, homogeneous and compact, and very oily in lustre, with many inclusions of what is apparently another form of nephrite. The piece was evidently cut out of a large boulder stratified perpendicularly to the basin—that is, with the cut entirely across the bedding of the material.



691 CH'EN-LUNG (1736-1795) PAIR OF RICE-BOWLS (*Fan Wan*) CHINA  
692

Dimensions: 2.0 × 4.69 inches. 5.1 × 11.9 centimetres. Weight: 691=5.426 ounces. 153.828 grammes  
692=5.344 ounces. 151.508 grammes  
Specific gravity: 691=2.9493; hardness: 6.5. *Nephrite*  
692=2.9492; 6.5. *Nephrite*  
Color: White with light greenish tint

Two small rice-bowls, with slightly flaring rim, a low foot cut in scallop fashion, and a double band of vertical flutings convex without and concave within.

The material of both is translucent, homogeneous and compact, transmitted light showing a remarkably fine-grained nephrite with the constancy almost of a very pale chalcidony. In No. 691 trans-

mitted light shows two whiter veinings running transversely across the base, and a small whitish patch is seen on the lower part; while two brownish markings near the top are due probably to the absorption of some foreign substance while the mass was in its original uncut form.

693 CH'EN-LUNG (1736-1795) TWO WINE-CUPS (*Chiu Pei*) CHINA  
694

Dimensions: 693=1.06 × 2.09 inches. 2.7 × 5.3 centimetres. Weight: 693=1.182 ounces. 33.508 grammes  
694=1.16 × 2.09 inches. 2.9 × 5.3 centimetres. 694=.9705 ounce. 27.6150 grammes  
Specific gravity: 693=2.9696; hardness: 6.5. *Nephrite*  
694=2.9309; 6.5. *Nephrite*  
Color: White with light greenish tint

A pair of beautifully polished little wine-cups, of bowl-like form with slightly expanding lip and circular rim-like feet, and of egg-shell thinness, exhibiting by transmitted light a beautiful satiny sheen in large patches, due to the condensation of light on the large fibrous aggregations of the material, which is extremely tough.

695 CH'EN-LUNG (1736-1795) ROUND DISH (*P'an-tzū*) CHINA

Dimensions: 1.47 × 6.22 inches. 3.5 × 15.8 centimetres. Weight: 7.216 ounces. 204.575 grammes  
Specific gravity: 2.9915; hardness: 6.5. *Nephrite*  
Color: Spinach-green mottled with patches of grayish-green and spots of black

A small round saucer-like dish boldly carved and finely finished. Three rings of flutings, executed in higher relief than is usual, surround a convex button-shaped middle engraved with crossed lines. At the base the inner ring of florets curves inward so as to overlap the centre, the outer two rings being cut in the ordinary fashion.

In the translucent, very compact and homogeneous material of the piece are found large particles of the brilliant black metallic substance—apparently chromite—so characteristic of nephrite.



696 CH'IENT-LUNG (1736-1795) PAIR OF ROUND DISHES (*P'an-tzū*) CHINA  
 697

Dimensions: 1.59 × 6.41 inches. 4.0 × 16.2 centimetres. Weight: 696=7.730 ounces. 219.148 grammes  
 697=7.415 ounces. 210.242 grammes  
 Specific gravity: 696=3.0014; hardness: 6.5. *Nephrite*  
 697=2.9968; 6.5. *Nephrite*  
 Color: Spinach-green interspersed with cloudings of darker green

A pair of round saucer-like dishes of the conventional chrysanthemum pattern, finely fluted in three concentric rings encircling a round, nearly flat cross-hatched centre.

The material of these dishes is translucent, homogeneous and compact, and very horn-like in its general texture. When a strong light

is allowed to pass through it the color presents the appearance of moss held in snow, caused by the presence of particles of dark green in a lighter green with interspersed white veins of nephrite. The color of No. 696 is a trifle richer than that of No. 697. The fluting of both pieces is mathematically perfect.

698 CH'IENT-LUNG (1736-1795) FISH GONG (*Yü Ch'ing*) CHINA

Dimensions: 12.25 × 7.12 × .5 inches. 31.2 × 18.0 × 1.3 centimetres. Weight: 2 pounds 2.456 ounces. 976.831 grammes  
 Specific gravity: 2.9593; hardness: 6.5. *Nephrite*  
 Color: White of yellowish tone clouded with lighter tints

A hanging gong of triangular shape with rounded angles, carved in openwork in the shape of a carp swimming through a network of nymphaea lotus, a blossom of which is seen in front and a seed-vessel at the back over the tail of the fish. The carving is identical on both sides. This is suspended from a double-fish mount (*shuang yü pei*) of olive-green with shades of brown.

699 CH'IENT-LUNG (1736-1795) TRAY FOR WINE-CUP (*Tieh-tzū*) CHINA

Dimensions: 8.12 × 6.0 × .38 inches. 20.6 × 15.3 × 1.0 centimetres. Weight: 12.582 ounces. 356.700 grammes  
 Specific gravity: 2.9519; hardness: 6.5. *Nephrite*  
 Color: Light sage-green

An oval tray, of four-lobed foliated outline, fashioned with a projecting ring in the middle to hold a wine-cup. The ground between the central ring and the rim of the tray is filled with branches of

peach trees displaying flowers and fruit, and of longevity fungus springing on each side from a miniature open rockery, all executed in strong relief.

700 CH'IENT-LUNG (1736-1795) DISC (*P'ai-tzū*) CHINA

Dimensions: 3.12 × .38 inches. 8.0 × 1.0 centimetres. Weight: 4.447 ounces. 126.064 grammes  
 Specific gravity: 2.9427; hardness: 6.5. *Nephrite*  
 Color: Grayish-blue with a tinge of green

A circular disc, of foliated outline, carved on each side with a chrysanthemum in the centre and a border of ornamental scroll work. The back is perforated for a cord or wire.

701 CHIA-CH'ING (1796-1820) BOWL (*Wan*) CHINA

Dimensions: 2.47 × 5.62 inches. 6.3 × 14.3 centimetres. Weight: 10.293 ounces. 291.819 grammes  
 Specific gravity: 2.9809; hardness: 6.5. *Nephrite*  
 Color: White with very faint greenish tint

丰嘉  
製碗

A plain polished bowl of the ordinary "rice-bowl" pattern, with a solid circular rim as a foot, and slightly expanded edge. The mark, of four characters in antique Chinese script, engraved below is: *Chia-ch'ing nien chih*, "Made in the reign of Chia-ch'ing" (1796-1820).

The material is translucent, compact and remarkably homogeneous in its texture. By reflected light inclusions of an almost opaque white substance, apparently jadeite, are seen at the upper edge and through one side, as well as some veinings and cloudings illustrating the original boulder-like structure of the material.



702 CHIA-CH'ING (1796-1820)

INCENSE-BURNER (*Kai Lu*)

CHINA



Dimensions: 3.34 × 6.97 inches. 8.5 × 17.7 centimetres.

Weight: 14.535 ounces. 412.081 grammes

Specific gravity: 2.9546; hardness: 6.5. *Nephrite*

Color: White with greenish tint and cloudings and veinings of lighter color and different shades of brown

A shallow bowl resting upon a circular hollow foot spreading slightly at the rim. It is decorated outside in high relief with floral and foliated scroll patterns derived from the tree-peony, which also supplies the motive of the floral designs within the bowl and of those upon the cover, inside and out, all of which are executed in slighter relief. The cover is crowned with a knob of ring form, with recurved lip engraved above with floral ornament. The bowl has two large handles elaborately carved in openwork, composed of similar floral sprays, each of which is topped by a flower and has a movable ring upon its stem. The material is translucent, very compact, and very sinewy. By reflected light several long band-like marks of an almost opaque substance, apparently nephrite, are seen in the cover. As these are also present in the bowl itself, there can be no doubt but that both bowl and cover were made from the same piece.

703 FISH-BOWL (*Yü Kang*)  
CHIA-CH'ING (1796-1820)

CHINA

Dimensions: 4.03 × 6.84 inches. 10.2 × 17.4 centimetres.

Weight: 5 pounds 11.833 ounces. 2603.450 grammes

Specific gravity: 2.9466; hardness: 6.5. *Nephrite*

Color: White with greenish tint and clouds of brown



A bowl for goldfish, of depressed globular form with incurved rim, modelled in the shape of a Buddhist alms-bowl, or *pātra*. The bowl, which is thick and solid, is boldly carved outside with bats flying in clouds—twice five bats emblematic of the five kinds of happiness. The base of the bowl is engraved underneath with six characters filled in with gold: *Ta Ch'ing Chia-ch'ing nien chih*, "Made in the reign of Chia-ch'ing of the great Ch'ing (dynasty)."

The material is translucent, homogeneous and compact. The brilliant russet-brown staining on the upper part of the bowl is evidently an old staining in the original boulder from which the piece was made. On one side there is a large black stain, evidently chromic iron.



大嘉年  
清慶製

704

BEAKER OF ANCIENT BRONZE DESIGN (*Ku Tung Hua Ku*)  
CHIA-CH'ING (1796-1820)

CHINA

Dimensions: 10.19 × 6.03 × 3.66 inches. 25.9 × 15.3 × 9.33 centimetres.

Weight: 2 pounds 10.607 ounces. 1217.910 grammes

Specific gravity: 2.9810; hardness: 6.5. *Nephrite*

Color: Spinach-green

A tall beaker-shaped vase, with small rounded body, gently swelling foot, and widely expanded mouth; of eight-lobed outline, with alternate vertical ridges and grooves, the section simulates that of a flower with four petals. Two looped handles of pentagonal section spring from the sides and support pendent movable rings, and are fashioned above in the form of grotesque monsters' heads with spreading wings, affording a broad attachment to the neck of the vase. The body is decorated with a broad band in intaglio containing four heads of the gluttonous ogre (*fo-fo-tieh*) in the midst of conventional scrolls of ancient bronze design. The neck and foot are encircled with bands of similar scroll design passing above and below into formal palm leaves, the tips of which extend nearly to the mouth and base of the beaker. The scrolls filling in the leaves and decorative details generally are all copied from those of sacrificial vessels of ancient bronze.

The material is faintly subtranslucent, compact and homogeneous, with large patches of a black metallic substance, apparently chromic iron.



705

LARGE BOWL WITH COVER (*Ta Kai Wan*)

CHINA

CHIA-CH'ING TO TAO-KUANG (1796-1850)



Dimensions: 5.0 × 8.31 inches. 12.7 × 21.1 centimetres.  
 Weight: 2 pounds 10.235 ounces. 1197.383 grammes  
 Specific gravity: 2.9801; hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A large tazza-shaped bowl with cover, elaborately and intricately carved in openwork with floral scrolls. The bowl has a low spreading foot encircled by a plain prominent rim, a lip projecting horizontally, decorated with an openwork formal band of floral scroll pattern extending all round the mouth, and two handles at the sides, each one fashioned in the form of a spray of peony springing from the foot of the bowl and culminating in a drooping flower surrounded by four leaves. The body is carved with a broad openwork band of intricate floral design interrupted by the two handles. This band consists of a reticulated arrangement of branches of the pine, bamboo, and blossoming plum, the three floral emblems of longevity—the pine placed in the middle, the bamboo and plum on its right and left respectively. The cover has its rounded convexity also carved and pierced with an intricate network of floral design composed of large peony flowers in the middle of each of the six panels, surrounded by formal leaf-scrolls with a pair of bats, symbols of happiness, flying through the leaves. It is surmounted by a hollow handle with excavated base and encircled with a double corona with rings of pierced ornament at the top.



The material is translucent, homogeneous and compact, showing, when a strong light is allowed to pass through it, a large brown vein and a slightly broken structure suggesting a former alteration, as well as an inclusion of a black metallic substance, apparently chromic iron.

706

CH'EN-LUNG (1736-1795)

SMALL DISH (*P'en*)

CHINA

Dimensions: 5.72 × 4.28 × 1.69 inches. 14.5 × 10.9 × 4.63 centimetres. Weight: 9.660 ounces. 273.860 grammes  
 Specific gravity: 2.9603; hardness: 6.5. *Nephrite*  
 Color: White with a pale-greenish tint

A flat-bottomed dish of oval outline, with upright foliated sides of four-lobed section alternately ribbed and fluted in vertical lines, and poised upon four scrolled gently spreading feet. The carved relief decoration outside consists of a broad conventional band composed of

four butterflies, displayed on a background of lightly designed floral sprays so as to cover each lobe of the dish. The form of the dish is a miniature of that used by the Chinese for growing bulbs like those of the narcissus, which flourish in water on a ground of pebbles.

707

CH'EN-LUNG (1736-1795)

PENDANT (*P'ai-tzū*)

CHINA

Dimensions: 1.5 × 1.12 × 1.12 inches. 3.8 × 2.8 × 2.8 centimetres. Weight: 1.360 ounces. 38.548 grammes  
 Specific gravity: 2.9188; hardness: 6.5. *Nephrite*  
 Color: White with light greenish tint, and a layer of dark gray

A small pendant carved in the shape of a lion-like monster of fabulous mien, with a branch of *ling-chih* (*Polyporus lucidus*), the fungus of longevity, in its mouth.

The jade is in two layers, so that the white monster contrasts sharply with the dark grayish-green fungus which it brings in its mouth. The pendant is strung for suspension with a coral bead and seed-pearls.

708

CH'EN-LUNG (1736-1795)

PENDANT (*P'ai-tzū*)

CHINA

Dimensions: 2.09 × 1.31 × .69 inches. 5.3 × 3.3 × 1.7 centimetres. Weight: 1.5406 ounces. 43.6764 grammes  
 Specific gravity: 2.9158; hardness: 6.5. *Nephrite*  
 Color: White with a very light greenish tint, and very dark gray, almost black

A pendant carved in the shape of one of the Taoist genii, Liu Han, mounted upon his familiar, the three-legged toad, which reveals to him, it is said, secrets of immortality and hidden treasures for the benefit of his faithful votaries. He is carved in white jade, while the toad is dark green, almost black.

Our Chinese author, Liu, has described in his article in Volume I, Part II, how highly black and white jade in two layers is appreciated, when the colors are sharply defined so as to make an effective contrast for a carving of this kind. The pendant is strung for suspension with a coral bead and seed-pearls.



709 CH'IENT-LUNG (1736-1795) STAND FOR WINE-CUP (*Wan Chou*) CHINA

Dimensions:  $7.66 \times 3.62 \times 1.97$  inches.  $19.4 \times 9.2 \times 5.0$  centimetres. Weight: 4.264 ounces. 120.881 grammes  
Specific gravity: 2.9744; hardness: 6.5. *Nephrite*  
Color: Very light sage-green

A stand for a cup, carved in the shape of a flat-bottomed boat (*chou*). The under surface is fluted longitudinally, interrupted by two bands of ornamental scrolls near the rim of the saucer, the sides being polished to an almost egg-shell thinness so that the ornamental pattern shows through as on a transparency. The bottom is plain, with a solidly rimmed foot pointed at each end.

710 CHIA-CH'ING OR TAO-KUANG (1796-1820) GIRDLE-BUCKLE (*Tai Kou*) CHINA

Dimensions:  $2.62 \times .62 \times .66$  inches.  $6.7 \times 1.6 \times 1.7$  centimetres. Weight: 1.003 ounces. 28.436 grammes  
Specific gravity: 3.3309; hardness: 7.0. *Jadeite*  
Color: Greenish-gray and deep, rich red

A girdle-buckle of small size with a stud at the back. One end is carved in the form of a two-horned dragon's head, turned toward a smaller lizard-like dragon in the midst of a floral scroll, which is projected in openwork relief upon the blade of the buckle. The contrasted colors of the layers of the stone are taken advantage of to produce a red dragon on a greenish background, so that it looks almost like a buckle of carved carnelian.

711 CH'IENT-LUNG (1736-1795) GIRDLE-BUCKLE (*Tai Kou*) CHINA

Dimensions:  $3.72 \times .66 \times .97$  inches.  $9.4 \times 1.7 \times 2.4$  centimetres. Weight: 2.126 ounces. 60.2668 grammes  
Specific gravity: 3.3232; hardness: 7.0. *Jadeite*  
Color: Mottled greenish-gray and bright red

A small buckle for a belt, carved out of a piece of jade of two colors, with a stud projecting behind and a pair of archaic dragons executed in full undercut relief in front of the curved band which forms the body of the clasp. The larger horned head with prominent eyes on one side represents the parent dragon watching its young, which is carved in full detail enveloped in scrolled clouds.

The red dragons are carved in the crust of the original boulder, as described in the similar buckle No. 710, while the pale-green under part exhibits the proper color of the matrix.

712 CH'IENT-LUNG (1736-1795) SNUFF-BOTTLE (*Yen Hu*) CHINA

Dimensions:  $2.16 \times 1.5 \times 1.19$  inches.  $5.5 \times 3.8 \times 3.0$  centimetres. Weight: 3.307 ounces. 93.759 grammes  
Specific gravity: 3.3309; hardness: 7.0. *Jadeite*  
Color: Mottled greenish-gray and bright red

A snuff-bottle of quaint form carved in the shape of the three-legged toad which is supposed to inhabit the moon, and hollowed out in the interior to hold snuff. Like the last piece (No. 711), the jade exhibits two layers, of which the brightly mottled red layer formed the original crust of the stone.

713 CH'IENT-LUNG (1736-1795) BUTTON (*Niu-tzū*) CHINA

Dimensions:  $1.84 \times 1.5 \times .41$  inches.  $4.7 \times 3.8 \times 1.0$  centimetres. Weight .991 ounce. 28.0938 grammes  
Specific gravity: 3.3222; hardness: 7.0. *Jadeite*  
Color: Dark brownish-red

A button carved in openwork, in the shape of a crab, out of a layer of mottled red jade which probably once formed the crust or skin of a weathered boulder. the toad-shaped snuff-bottle No. 712, and to have been intended to be worn with it, strung upon the girdle in the fashion of a Japanese *netsuké*.

This piece seems to have been carved out of the same material as



714 CH'IENT-LUNG (1736-1795) PAPER-WEIGHT (*Shu Chên*) CHINA

Dimensions:  $6.66 \times 2.06 \times 1.38$  inches.  $16.9 \times 5.2 \times 3.5$  centimetres. Weight: 13.350 ounces. 378.469 grammes  
 Specific gravity: 2.9685; hardness: 6.5. *Nephrite*  
 Color: Light spinach-green with black inclusions, and a light gray caused by calcination

A paper-weight fashioned in the form of a branch of the tuberculated gourd called by the Chinese *lai kua*, which is a species of *Momordica*. The branchlet bears a pair of twin gourds, carved in naturalistic detail, and a dentated leaf, while smaller leaves and tendrils are

spread over the surface of the fruit, the stalks of which form an open network.

The piece has been exposed to fire, which has caused the discoloration and disintegration of some parts of the surface.

715 CHIA-CH'ING TO KUANG-HSÜ (1796-1875) EIGHT WINE-CUPS (*Chiu Pei*) CHINA

Dimensions: Each  $1.5 \times 2.03$  inches.  $3.8 \times 5.2$  centimetres. Weight: A=1.341 ounces. 38.013 grammes  
 Specific gravity: A=3.3224; hardness: 7.0. *Jadeite* B=1.575 ounces. 44.658 grammes  
 B=3.2576; 7.0. *Jadeite* C=1.378 ounces. 39.072 grammes  
 C=3.2507; 7.0. *Jadeite* D=1.523 ounces. 43.167 grammes  
 D=3.3286; 7.0. *Jadeite* E=1.391 ounces. 39.432 grammes  
 E=3.3200; 7.0. *Jadeite* F=1.525 ounces. 43.231 grammes  
 F=3.3016; 7.0. *Jadeite* G=1.548 ounces. 43.894 grammes  
 G=3.3197; 7.0. *Jadeite* H=1.409 ounces. 39.955 grammes  
 H=3.3187; 7.0. *Jadeite*

Color: White with very delicate tintings of lavender and tiny patches of rich green

A set of eight wine-cups of upright form, with slightly expanding lip, a spreading rim-like foot, and long, broad handles carved in openwork with scroll patterns. The handles show that they are modern, as old Chinese cups never have handles. The material is coarsely crystalline, exhibiting in some instances almost absolutely transparent crystalline spots.

716 CHIA-CH'ING TO KUANG-HSÜ (1796-1875) ARMLET (*Cho-tzū*) CHINA

Dimensions:  $3.12 \times .41$  inches.  $7.9 \times 1.0$  centimetres. Weight: 2.384 ounces. 67.752 grammes  
 Specific gravity: 3.2866; hardness: 7.0. *Jadeite*  
 Color: Very light lavender mottled with patches of light lettuce-green

An armlet carved out of beautifully pure and clear jadeite, showing occasional fractures and more or less veining or marking of a whiter material. The crystalline structure can be very readily made out by means of a pocket lens.

717 CHIA-CH'ING TO KUANG-HSÜ (1796-1875) ARMLET (*Cho-tzū*) CHINA

Dimensions:  $3.56 \times .41$  inches.  $9.0 \times 1.0$  centimetres. Weight: 2.478 ounces. 70.260 grammes  
 Specific gravity: 3.3085; hardness: 7.0. *Jadeite*  
 Color: Lavender tinged in parts with gray, green, and delicate brown

An armlet of remarkably pure jadeite, the crystalline structure of which can readily be made out with a pocket lens.

718 CHIA-CH'ING TO KUANG-HSÜ (1796-1875) ARMLET (*Cho-tzū*) CHINA

Dimensions:  $3.16 \times .44$  inches.  $8.0 \times 1.1$  centimetres. Weight: 2.222 ounces. 62.982 grammes  
 Specific gravity: 3.3232; hardness: 7.0. *Jadeite*  
 Color: Mottled light gray with markings of green, lilac, and brownish-gray

An armlet of translucent jadeite of fairly coarse crystalline structure. The coloration is beautifully delicate and varied, and the polish good.



## CATALOGUE

239

719 CHIEN-LUNG (1736-1795)

ARMLET (*Cho-tzu*)

CHINA

Dimensions:  $2.97 \times .41$  inches.  $7.5 \times 1.0$  centimetres. Weight: 1.984 ounces. 56.248 grammes  
 Specific gravity: 3.2995; hardness: 7.0. *Jadeite*  
 Color: Bright green to pale green, irregularly flecked and clouded with spots of emerald-green

An armlet of plain rounded section, highly polished so as to bring out the brightly variegated structure of the material without any additional ornament.

720

## SACRIFICIAL VESSEL

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions:  $6.0 \times 3.25 \times 1.38$  inches.  $15.2 \times 8.2 \times 3.5$  centimetres. Weight: 1 pound 4.806 ounces. 589.851 grammes  
 Specific gravity: 3.2941; hardness: 7.0. *Jadeite*  
 Color: Creamy white with cloudings, veinings, and streaks of bright emerald-green and lettuce-green

A sacrificial vessel in the form of a slender pitcher with cover. The entire surface is covered with curved lines representing waves, in which several small nondescript fishes can be discerned. The upper part of one side is carved in deep relief with a fish of larger size apparently swimming among plants—all in a vivid green on a creamy-white background. At the back a long handle extends down the

greater part of the vessel. On the front a ring hangs suspended from a loop which projects downward from the lip to the body. Just below this is a small perforated protuberance similar to the handle. The cover is of the form that usually accompanies this style of vessel, with a long handle and two knobs on the front. The whole is apparently fashioned after an ancient bronze sacrificial vessel.

721

PIPE-MOUTHPIECE (*Yen-tung Tsui*)

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions:  $1.75 \times .81$  inches.  $4.4 \times 2.0$  centimetres. Weight: 1.2216 ounces. 34.6332 grammes  
 Specific gravity: 3.3300; hardness: 7.0. *Jadeite*  
 Color: Light lilac with an uneven blending of opaque white

A short, thick mouthpiece for a tobacco-pipe.

The material is a coarsely crystalline jadeite the color of which is probably due to chromium.

722

MANDARIN BEADS (*Ch'ao Chu*)

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions: Total length: 56.69 inches. 144.0 centimetres. Total weight: 1 pound .268 ounce. 461.200 grammes  
 Diameter of beads: .56 inch. 1.4 centimetres. Hardness: 7.0. *Jadeite*  
 Color: Delicate pea-green

A string of one hundred and eight beads, worn as part of the official costume of mandarins under the reigning dynasty. It was copied from the Buddhist rosary, which every monk wears and uses to count his invocations, and contains the same number of beads—a number to which Buddhists attach a peculiar sanctity.

The material of these beads is translucent, and varies from white with a delicate green tint to a darker green, some of the beads having patches of bright emerald-green. The crystalline structure and minute fracturing are visible in all the beads, and they were apparently made from one block of jadeite.

723

FINGER-RING (*Chih Huan*)

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions:  $1.0 \times .38$  inch.  $2.5 \times .9$  centimetres. Weight: .226 ounce. 6.430 grammes  
 Specific gravity: 3.3241; hardness: 7.0. *Jadeite*  
 Color: Light emerald-green and white

A finger-ring, of translucent, homogeneous and compact material of granular-crystalline structure, carved with a prominent band projecting in front. The front part of the ring, thickened in this way, is

carved out of the more brilliant part of the stone, so that the effect of the coloring is much increased by the contrast of the paler part of the ring behind.



724

SNUFF-BOTTLE (*Pi-yen Hu*)

CHINA

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

Dimensions:  $2.0 \times 1.81 \times .62$  inches.  $5.1 \times 4.6 \times 1.6$  centimetres. Weight: 2.191 ounces. 62.0303 grammes  
 Specific gravity: 3.3356; hardness: 7.0. *Jadeite*  
 Color: A mixture of emerald-green with very dark green and gray

A small flattened snuff-bottle, wide at the shoulder and narrow at the base, with a short constricted neck and wider mouth pierced for a stopper. It is of beautifully mottled green jadeite and is decorated similarly on both sides with a poppy, showing capsule, over a ground-

work of leaves, all in slight relief and delicately etched. This is one of the daintiest little bottles in the Collection.  
 The material is translucent, homogeneous and compact.

725

ARMLET (*Cho-tzu*)

CHINA

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

Dimensions:  $3.5 \times .44$  inches.  $8.8 \times 1.1$  centimetres. Weight: 2.736 ounces. 77.5718 grammes  
 Specific gravity: 3.2716; hardness: 7.0. *Jadeite*  
 Color: Light mottled gray and brown; calcined

A plain undecorated ring showing the effects of fire action or heat, to which it was exposed during the conflagration which destroyed its late owner's residence at Irvington-on-Hudson, New York, in 1878. Previous to the fire the coloration was a mottling of pea-green, gray, and brown. The purplish hue of the brown now seen on the armlet is due to stainings of the iron or bronze with which it was in

contact during the fire. The heat has crackled the material throughout, and has completely cracked the ring at one side, the parting of the crack having a width of half a millimetre. The piece has suffered more on one side than the other, which still retains its polish.  
 This piece is interesting as a well-authenticated burnt piece of jadeite.

726

CUP WITH COVER (*Kai Ch'a Wan*)

CHINA

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

Dimensions:  $3.06 \times 4.69$  inches.  $7.8 \times 11.9$  centimetres. Weight: 10.866 ounces. 308.095 grammes  
 Specific gravity: 3.3233; hardness: 7.0. *Jadeite*  
 Color: Grass-green mottled with gray and marked with a few veinings of russet

A cup of the ordinary Chinese bowl-like form, with slightly expanded edge, surrounded at the base with a prominently rimmed foot. The cover is crowned with a circular banded handle of solid section slightly projecting above. A fair specimen of modern workmanship.

When a strong light is allowed to pass through the piece it resolves itself into coarse granulations of grass-green mixed with gray. Running through both cup and cover there is a vein with brown stainings showing the original stratification of the jadeite.

727

FLOWER VASE (*Hua Ch'a*)

CHINA

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

Dimensions:  $5.9 \times 2.75 \times 2.53$  inches.  $15.1 \times 7.0 \times 6.4$  centimetres. Weight: 1 pound 14.000 ounces. 850.484 grammes  
 Specific gravity: 3.3187; hardness: 7.0. *Jadeite*  
 Color: Lavender veined with green of varied tone passing from pale pea-green through lettuce-green to bright emerald, with occasional touches of light brown

A rustic flower vase modelled in the form of the gnarled trunk of a pine overspread with leafy branches of the tree executed in relief. A branching fungus (*Polyporus lucidus*) is growing at the foot of the tree, and sprouts and branches of graceful bamboos rise behind to decorate the back of the vase with bright foliage. The leaves follow the original green veining of the material so as to give a charmingly naturalistic effect to the design.

Under the foot of the vase is incised the inscription: "Made in the cyclical year *ssü-mao*, in the spring, and carved at T'êng-yang. I like it exceedingly! (Signed) Hsü CHIH."

If the cycle be the present one, this year would correspond to 1879 A.D.; in the preceding cycle it would be 1819; it is difficult to say

which of these two dates is intended. T'êng-yang is probably another name of T'êng-yueh (Momien), a town in the province of Yunnan where much jade is carved. Dr. Logan Jack, a geologist, who recently travelled through Momien, says in the "Geographical Journal," March, 1902, that "jade cutting and jade speculation seem to employ the energies of the greater part of the population."

This was recently procured in Paris from a French officer who had just returned from the expedition to Peking, bringing it with some other pieces of jade. It came from the Winter Palace, and is remarkable for the intrinsic beauty of the material more than for the workmanship.



728

PLUME-HOLDER (*Ling Kuan*)

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions:  $2.88 \times .88$  inches.  $7.3 \times 2.2$  centimetres. Weight: 1.139 ounces. 32.304 grammes  
 Specific gravity: 2.9528; hardness: 6.5. *Nephrite*  
 Color: Milky-white

A cylindrical tube, closed at one end and wider at the open end than at the other, which is carved into a loop to be strung with a cord when it is attached to the hat of a Chinese mandarin who has been decorated with the peacock's feather, which is inserted into the tube. The "peacock's feather" is a military decoration and is of

two grades, indicated by the number of "eyes" on the feather—the lower grade having only one eye, the higher two. The piece is beautifully polished and decorated on one side with a bat, symbol of happiness, and the Chinese character *hsi*, "joy."  
 The material is very pure and translucent.

729

SHEATH-KNIFE (*Tao-tzu*)

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions:  $7.97 \times .78 \times .59$  inches.  $20.2 \times 2.0 \times 1.5$  centimetres. Weight: 3.267 ounces. 92.635 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very light greenish tint

A little knife, with a fruit-pick of yellow metal, mounted in a case and intended to be carried suspended from the girdle. The case and the handle of the knife are jade elaborately carved in openwork with floral designs and ornamental pierced borders of formal pattern.



The material is translucent, homogeneous and compact, and remarkably free from impurities of all kinds. When a strong light is allowed to pass through it the sinewy character is very apparent.

730

TWELVE ANIMALS (OR SIGNS) OF THE ZODIAC (*Shih-erh-Chin*)

CHIA-CH'ING TO KUANG-HSÜ (1796-1875)

CHINA

Dimensions: A=	$2.16 \times 1.59 \times 1.28$ inches.	$5.5 \times 4.0 \times 3.2$ centimetres.	Weight: 3.104 ounces.	88.012 grammes
B=	$2.16 \times 1.66 \times 1.28$ inches.	$5.5 \times 4.2 \times 3.2$ centimetres.	2.912 ounces.	82.852 grammes
C=	$2.16 \times 1.59 \times 1.31$ inches.	$5.5 \times 4.0 \times 3.3$ centimetres.	2.852 ounces.	80.880 grammes
D=	$2.28 \times 1.78 \times 1.28$ inches.	$5.8 \times 4.5 \times 3.2$ centimetres.	2.728 ounces.	77.347 grammes
E=	$2.22 \times 1.78 \times 1.31$ inches.	$5.6 \times 4.5 \times 3.3$ centimetres.	3.239 ounces.	91.850 grammes
F=	$2.16 \times 1.75 \times 1.16$ inches.	$5.5 \times 4.4 \times 2.9$ centimetres.	3.037 ounces.	86.110 grammes
G=	$2.25 \times 1.66 \times 1.34$ inches.	$5.7 \times 4.2 \times 3.4$ centimetres.	2.858 ounces.	81.034 grammes
H=	$2.09 \times 1.62 \times 1.28$ inches.	$5.3 \times 4.1 \times 3.2$ centimetres.	2.307 ounces.	65.417 grammes
I=	$2.16 \times 1.59 \times 1.28$ inches.	$5.5 \times 4.0 \times 3.2$ centimetres.	2.533 ounces.	71.818 grammes
J=	$2.16 \times 1.59 \times 1.19$ inches.	$5.5 \times 4.0 \times 3.0$ centimetres.	2.931 ounces.	83.121 grammes
K=	$2.28 \times 1.59 \times 1.28$ inches.	$5.8 \times 4.0 \times 3.2$ centimetres.	3.247 ounces.	92.061 grammes
L=	$2.16 \times 1.62 \times 1.22$ inches.	$5.5 \times 4.1 \times 3.1$ centimetres.	2.871 ounces.	81.422 grammes
Specific gravity: A=	2.9595; hardness: 6.5.	<i>Nephrite</i>		
B=	2.9619; 6.5.	<i>Nephrite</i>		
C=	2.9659; 6.5.	<i>Nephrite</i>		
D=	2.9604; 6.5.	<i>Nephrite</i>		
E=	2.9611; 6.5.	<i>Nephrite</i>		
F=	2.9615; 6.5.	<i>Nephrite</i>		
G=	2.9623; 6.5.	<i>Nephrite</i>		
H=	2.9652; 6.5.	<i>Nephrite</i>		
I=	2.9593; 6.5.	<i>Nephrite</i>		
J=	2.9602; 6.5.	<i>Nephrite</i>		
K=	2.9604; 6.5.	<i>Nephrite</i>		
L=	2.9668; 6.5.	<i>Nephrite</i>		

Color: Very light sage-green

The twelve animals of the duodenary cycle which mark the two divisions of the ecliptic—the twelve mansions or places in which the sun and moon come into conjunction—and are thus in some degree analogous to our signs of the zodiac. They are here carved with human bodies and animal heads, fully clothed in dress of Chinese cut, holding different objects in their hands, and with tails somewhat comically protruding behind. They are:

A *Shoo*, the Rat, holding a short staff or scroll in the right hand, and corresponding to the cyclical character *tsü*.

B *Niu*, the Ox, holding a fly-brush or chowry, and corresponding to the cyclical character *ch'ou*.

C *Hu*, the Tiger, holding a basket of flowers, and corresponding to the cyclical character *yin*.

D *T'u*, the Hare, with an open fan in the right hand and a flower in the left, and corresponding to the cyclical character *mao*.

E *Lung*, the Dragon, holding a flaming jewel, and corresponding to the cyclical character *ch'ên*.

F *Shê*, the Serpent, with hands hidden in the wide sleeves, and corresponding to the cyclical character *szü*.





- G *Ma*, the Horse, holding a palm-leaf ending in a chowry, and corresponding to the cyclical character *wu*.  
 H *Yang*, the Goat, with a short staff or scroll in the left hand, and corresponding to the cyclical character *wei*.  
 I *Hou*, the Monkey, holding a long staff, and corresponding to the cyclical character *shên*.  
 J *Ki*, the Cock, holding the monad symbol of creative energy, and corresponding to the cyclical character *yu*.  
 K *Ch'uan*, the Dog, holding a halberd, and corresponding to the cyclical character *hsü*.  
 L *Chu*, the Boar, with an arrow in the right hand and a bow tucked under the left arm, and corresponding to the cyclical character *hai*.

These are all supposed to exercise an influence, according to the attributes ascribed to each, over the hour, the day, or the year to which through the duodenary cycle of symbols they respectively belong. The usage of assigning a division of the ecliptic to a particular animal or sign is admittedly of foreign origin, and is traced to intercourse with the Tartar nations of Central Asia, having first

appeared in China during the Han dynasty in the second century of our era.

The "twelve terrestrial branches" of the duodenary cycle to which these twelve animals correspond are used to designate the twelve hours into which the Chinese divide the day; and they also unite with the "ten celestial stems" which form a cycle of ten to form the sexagenary cycle, or "cycle of sixty," used by the Chinese in counting their years and days since the sixty-first year of the Emperor Hwang-ti (2637 B.C.), and by the Japanese from 284 A.D., when they first became acquainted with China, to the year 1872, when the Gregorian Calendar was adopted. The Cycle of Ten and the Cycle of Twelve are as follows:

## THE TEN STEMS

- 1 Chia
- 2 Yih
- 3 Ping
- 4 Ting
- 5 Wu
- 6 Chi
- 7 Kêng
- 8 Hsin
- 9 Jên
- 10 Kuei

## THE TWELVE BRANCHES

- 1 Tzû
- 2 Ch'ou
- 3 Yin
- 4 Mao
- 5 Ch'ên
- 6 Szû
- 7 Wu
- 8 Wei
- 9 Shên
- 10 Yu
- 11 Hsü
- 12 Hai

These are united to form the Cycle of Sixty by combining the first of the Ten with the first of the Twelve, the second of the Ten with the second of the Twelve, and so on until the series of Ten is exhausted, leaving two of the series of Twelve unpaired. This pairing is continued by going back to the beginning of the series of Ten and combining that with the eleventh of the series of Twelve, and so on until the series of Ten has been used six times and the series of Twelve five times, when the cycle begins over again. *Chia-tzû* is the first of the cycle, and as *tzû* corresponds to the Rat, the year which is designated *Chia-tzû* may be called the "year of the Rat"; *Yih-ch'ou*, the "year of the Ox"; and so on.

"The first explicit mention in Chinese books of the practice of denoting years by the names of animals is found in the history of the Tang dynasty (618-906), where it is recorded that an envoy from the Kirghiz spoke of events occurring in the year of the Hare, or of the Horse." (Mayer's "Chinese Reader's Manual," p. 352.)

As *Chi-hai* is the cyclical number of the year 1899, that is the year of the Pig; *Kêng-tzû*, of 1900, the year of the Rat; and *Hsin-wu*, of 1901, the year of the Horse.

Dimensions: 10.09 × 7.5 × .59 inches. 25.6 × 19.0 × 1.5 centimetres. Weight: 1 pound 13.155 ounces. 826.540 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green, and other colors as given below

A plaque mounted on a carved wooden stand as a screen to stand within a shrine for incense to be burned before it. The central figures of the picture, carved out of white jade, represent Fu, Lu, and Shou, the three most popular divinities of Taoism, aged personages dressed in flowing robes of Taoist style. They stand upon an irregular rocky formation of lapis lazuli, under a canopy formed by a spreading pomegranate tree. There are growing plants of cactus in turquoise, with other flowering plants about, and their various emblems are scattered about in the background. The gnarled stem of the tree and the branching twigs are of gray nephrite, the leaves of brilliant emerald-green jadeite; the flowers are carved out of rubies and garnets, and the fruit, fashioned in a dead-oak-leaf colored jadeite, is bursting open and reveals the ruby pulp inside, which consists of garnets and spinel. The star-god of happiness, Fu Hsing, stands on the left, with his emblems—two bats, of ruby,

glass-enamel, and hyacinth rose-quartz—flying over his head. The star-god of rank, Lu Hsing, has the place of honor in the centre, holding a ju-i sceptre in his hand, with his emblems—the moutan-peony and a branch of red coral—near at hand. He figures as one of the forms of the highest deity of the Taoist pantheon, Yü Hwang Shang Ti, whose celestial abode is the Great Bear, where he sits enthroned near the north pole, while the other constellations circle around in his honor. The star-god of longevity, Shou Lao, the "ancient of ages," a canonization of Lao-tzû, the reputed founder of Taoism, whose spirit is installed in one of the constellations near the south pole, has his conventional smiling face and wrinkled protuberant forehead, and is leaning upon a long staff to the head of which is tied a pilgrim's gourd. He holds a sacred peach, as the "fruit of life," in his left hand, and another of his emblems, the magic fungus, with ruby head, is growing from the rock below.



These figures stand upon a flat round panel of mottled dark-green nephrite, defined by a circular line and framed by a circular band of fretwork carving. This is pierced with an interlacement of floral sprays of chrysanthemum pattern enclosing in their meshes the eight auspicious emblems (*pa chi-hsiang*) of Buddhist lore, another illustration of how much Taoism borrows from the sister religion. Projecting above and below from the rim of this circular frame are other symbolical designs, all carved in openwork in the same plaque of nephrite. The top is occupied by the musical gong of angular force, with fillets, suspended from it, tied in an elaborate knot where two fish are strung upon the fillets. *Chi ch'ing yu yü*—"The musical

stone and fish"—is the name of this symbolical design, which means also "Good fortune and abundance." Five bats project round the rest of the circumference, emblems of the five happinesses. The one below is larger than the rest and is surrounded by floral sprays of conventional lotus design.

The material, both white and green, is translucent, homogeneous and compact, with some of the original vein-markings and stainings visible.

The piece was presented to this Collection by Dr. Stephen W. Bushell, C. M. G.

## 732 CH'EN-LUNG (1736-1795)

PENDANT (*P'ai-tzū*)

CHINA

Dimensions:  $2.0 \times .69 \times .62$  inches.  $5.1 \times 1.7 \times 1.6$  centimetres. Weight: .717 ounce. 20.320 grammes  
Hardness: 7.0. *Jadeite*  
Color: A mixture of emerald-green and gray, with patches of black

A pendant in the form of an egg-plant (*ch'ieh-tzū*), mounted with gold, capped with an imitation pearl, and pierced with a wire for suspension. The material is only faintly translucent, but the coloration is rich and the polish good.

## 733 CH'EN-LUNG (1736-1795)

GOLD-MOUNTED JEWELRY (*Shou Shih*)

CHINA

Total weight: 5.480 ounces. 155.357 grammes  
Hardness: 7.0. *Jadeite*  
Color: Emerald-green with patches of lighter tints

A magnificent set of jewels, consisting of a pendant of jadeite mounted in gold, a pair of ear-rings of the same material also mounted in gold, and a bracelet of gold with a central medallion of jadeite. The jade objects are of artistic Chinese workmanship and were obtained in Peking by Count Kleczkowski, a member of the staff of General Cousin-Montauban (later Count Palikao), the general commanding the French forces in the Anglo-French operations before Peking in 1860, when the famous Imperial Summer Palace—the Yuan Ming Yuan—was looted and destroyed. In Paris he had them mounted in rich gold settings of floral design for his wife. They consequently became known as the "Countess Kleczkowski jewels." After the death of the count they were procured for this Collection. Their chief charm lies in the beautifully pure material of rich emerald-green, its translucency, and its polish.

The pendant is a branchlet of Buddha's-hand citron, consisting of two citrons with the peculiar finger-like points carved in openwork suspended from a leafy twig which hangs upon two interlacing rings worked out of the same piece of jadeite. Two little perforated balls of the same kind of material are introduced in the setting. The color is a very rich dark emerald-green of great lustre. It has the reputation of being more luminous than any other known piece.

The gold chatelaine by which it is suspended is ornamented with nine rose-cut diamonds.

The ear-rings are in the form of short chains of three circular links, suspended by gold rings set with six old rose-diamonds from balls of jadeite similar to those on the pendant. They are of a darker emerald-green than the other pieces of the set.

The bracelet is composed of a small girdle-clasp of archaic design, one extremity curving round to the front and a round stud projecting at the back. The design, carved in undercut relief with openwork, is that of a celestial dragon guarding its young—*huang lung hsün tzū*. The head of a two-horned dragon projects at one end of the clasp, pointed toward the smaller dragon which bestrides the front with its coiled body and bifid tail. Floral scrolls springing from a branch which the dragon holds in its mouth fill in the intervals. This beautiful object was evidently made from a stratified piece of jadeite, the color being in layers. This is well shown, the upper part being a rich brilliant emerald-green, while the back is a lighter shade of green mottled with gray.

Material of such purity and such varied richness of color as found in this set is of the utmost rarity, and is the most appreciated of emerald-green jadeite. In all his experience, the possessor of this Collection has failed to see its equal, and believes it to be unique.

## 734 CH'EN-LUNG (1736-1795)

SCEPTRE (*Ju-i*)

CHINA

Dimensions:  $20.0 \times 4.88$  inches.  $50.9 \times 12.0$  centimetres.  
Plaques:  $3.38 \times 3.38$ ,  $2.62 \times 1.62$ ,  $2.0 \times 2.0$  inches.  $8.5 \times 8.5$ ,  $6.8 \times 4.2$ ,  $5.1 \times 5.1$  centimetres  
Hardness: 7.0. *Jadeite*  
Color: Emerald-green flaked with black

A ju-i sceptre mounted with three plaques of thin translucent jadeite. The two circular plaques at the ends are carved in relief with a round *shou* (longevity) character encircled by five bats, emblems of the five happinesses; the oblong plaque in the middle, with two bats embracing with their wings an oval longevity character.

The gilded sceptre is moulded and richly chased with floral scrolls of chrysanthemums enclosing the eight Buddhist emblems (*pa chi-hsiang*); the under surface is covered with blossoms and leaf-scrolls of the tree-peony.



735

IMPERIAL JADE-HANDLED KNIFE (*Huang Yü Tao*)

CHINA

CH'IENT-LUNG (1736-1795)

Dimensions of handle: 4.75 × .81 × .56 inches. 12.1 × 2.0 × 1.4 centimetres. Total weight: 8.159 ounces. 231.300 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint bluish tint



A knife of the usual Chinese form and style. The steel blade is encrusted with gold on both sides, and upon the back of the rim near the hilt is etched in well-formed gilded characters the inscription, *Ch'ien-lung nien chih*, "Made in the reign of Ch'ien-lung"—indicating that it was made at the imperial manufactory at Peking either for the use of the emperor or for an imperial present. The gold setting which unites the blade to the handle is chased with a floral pattern and is studded with lapis lazuli, carnelian, and turquoise. The handle is of the bluish-tinted white material, plainly polished, and without any sculptured ornament or inscription. The scabbard is of delicately chiselled repoussé gold in a free graceful design of

foliated scroll ornament, interrupted on the obverse and reverse faces by eight foliated apertures filled with the eight Buddhist emblems carved in turquoise, each poised on a lotus thalamus and encircled by fillets, in the following order: canopy; pair of fish; vase decorated with scrolls and ringed handles of grotesque heads; shell; endless knot; umbrella; wheel; bell represented by a double-headed gong suspended from a bat. The lotus flower is absent, but it is chased upon the broad tip of the scabbard. Floral bands like those upon the knife, studded with the same stones, surround the scabbard above and below. It is additionally strengthened at the base by a ring of ivory and lined with a layer of thin strips of bamboo.

736

IMPERIAL JADE-HANDLED KNIFE (*Huang Yü Tao*)

CHINA

CH'IENT-LUNG (1736-1795)

Dimensions of handle: 4.88 × .88 × .62 inches. 12.4 × 2.2 × 1.6 centimetres. Total weight: 8.565 ounces. 242.820 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint bluish tint

A knife of the usual Chinese form, with the steel blade much worn, but showing traces of the gold with which it was once coated. At the back, upon the border near the hilt, there is etched and inlaid with gold a vertical line of four characters: *Ch'ien-lung nien chih*, "Made in the reign of Ch'ien-lung." It is mounted in a gold setting which attaches it to the handle, chased with a delicate floral pattern, and studded with lapis lazuli, carnelian, and turquoise. The handle is deeply and finely carved with an imperial five-clawed dragon emerging from the waves and rising into the clouds (with the scroll forms of which it is enveloped), striving to reach the magic jewel of omnipotence, which is seen upon the left near the top emitting flaming rays of effulgence from its surface. The waves and clouds extend round to the other side of the handle to frame the panel which nearly fills it. This panel is engraved with an inscription in the handwriting of the emperor, which reads as follows:

予用精球出玉龍龜  
 亦曰名曰寶來  
 乾隆甲午仲春  
 月十五日  
 上理弗奇  
 御題  
 阿不  
 可  
 倒  
 還  
 持  
 以

"This piece of bright pure jade brought from the Yü-lung<sup>1</sup> Valley,  
 Of palest sea-green tint revealed through its polished depth,  
 Has been carved with appropriate designs by a skillful craftsman  
 Into a handle of fitting form for a precious steel knife.

The 'sliced fat'<sup>2</sup> stone has been adapted to slice fat!  
 Though the name originally expressed only its translucent whiteness,  
 It has become applicable to the use as well as to the material.  
 Is not this a curious coincidence between nature and art?  
 The sharp blade must not be carelessly grasped,  
 Nor may our imperial words be lightly turned to ridicule!"

"Written by the Emperor Ch'ien-lung in the first decade of the middle month of spring in the cyclical year *chia-wu*.<sup>3</sup>  
 "Sealed with the imperial seal."

The scabbard, which is of old repoussé work of the period and delicately chased, is strengthened at the base by a band of the same



floral design, composed of a diamond pattern enclosing square solid plates decorated with floral ornament in relief. The reticulations and the square plaques gradually diminish in size toward the extremity, where there are two encircling bands of floral scrolls. The tip is fashioned in the shape of a lotus thalamus enveloped in two rings of petals, with flames rising from it in pyramidal shape toward the jewel of Buddhism in the middle.

On both scabbard and handle there are two turquoise, two carnelian, and two lapis-lazuli inlays.

<sup>1</sup> Yü-lung is the Chinese name of the Yürüŋkâsh River, one of the rivers in Chinese Turkistan which produce jade.

<sup>2</sup> "Sliced fat" is a well-known name of white jade.

<sup>3</sup> 1774 A. D.

<sup>4</sup> There are two separate seals appended. The upper, round one contains the first of the mystical trigrams, three unbroken lines cut in intaglio, which is a synonym of *Ch'ien*, or Heaven. The lower, a square seal, encloses the character *lung* in relief, written in antique script.



737  
738CH'IENT-LUNG (1736-1795) PAIR OF SMALL JARS (*Hsiao Kuan*)

CHINA

Dimensions: 3.16 × 1.78 inches. 8.0 × 4.5 centimetres. Weight: 737=4.356 ounces. 123.496 grammes  
 Specific gravity: 737=2.9469; hardness: 6.5. *Nephrite* 738=4.384 ounces. 124.302 grammes  
 738=2.9483; 6.5. *Nephrite*  
 Color: White with faint greenish tint

A pair of small jars of oval form, bulging slightly toward the shoulder, with plain rims round the base, and smoothly polished. The covers are surmounted with buttons crowned with studs of emerald-green jadeite, and are inlaid with a ring of eight rubies round the top. The material is remarkably pure.

739  
740CH'IENT-LUNG (1736-1795) ELEPHANT CARRYING PRECIOUS VASE (*T'o Pao P'ing Hsiang*)

CHINA

HORSE CARRYING BUNDLE OF BOOKS (*T'o Shu Ma*)

CHINA

Dimensions: 739=4.56 × 4.09 × 2.09 inches. 11.6 × 10.4 × 5.3 centimetres.  
 Weight: 14.754 ounces. 418.300 grammes  
 740=4.56 × 3.28 × 2.0 inches. 11.6 × 8.3 × 5.1 centimetres.  
 1 pound 4.388 ounces. 578.000 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Dark sage-green



These are companion figures from some Chinese Buddhist shrine, as may be inferred from the mythological attributes. In Buddhist lore the elephant and horse figure among the Seven Precious Things called *Sapta Ratna* in Sanskrit, the paraphernalia of a *chakravarti*, or universal sovereign.

The elephant stands upon a pedestal engraved with scrolls to represent clouds. The horse has its hoofs immersed in water which is rising up in curling waves all round. The elephant brings the precious vase (*pao p'ing*) from the celestial regions. The horse is emerging from the Yellow River with the nine volumes (*Shu*) containing the nine mystic diagrams fabled to be the source of the most ancient philosophy of China. The vase and the books are bound round with fillets carved in openwork.

The animals are executed in Chinese style and finished with engraving filled in with gilding. The saddles and harness are mounted with rubies, and the elaborate saddle-cloths fringed with tassels and also bordered with jewels. The eyes of the animals are represented by rubies, and two tiny stones are inserted in the nostrils of the elephant's trunk. The saddle-cloth of the elephant is carved with brocade patterns of bats, symbols of happiness; that of the horse, with the branched fungus, the emblem of longevity. The elephant is ornamented with four large and one hundred and one small rubies (not reckoning seven which have been lost), while the horse has fifty-three small rubies (not reckoning two which have been lost).



741

CH'IENT-LUNG (1736-1795) SMALL BRUSH-HOLDER (*Hsiao Tung*)

CHINA

Dimensions: 3.59 × 1.66 inches. 9.1 × 4.2 centimetres. Weight: 5.922 ounces. 167.910 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Olive-green flecked with black

A miniature brush-holder of cylindrical form, with three scrolled feet. It is inlaid with emblems of longevity and happiness, carved in lapis lazuli, coral, agate, quartz, mother-of-pearl, and stained ivory. A branch winds down from the upper rim, bearing peaches, pomegranates, and Buddha's-hand citrons. A bat is flying across above, and a small clump of polyporus fungus (*ling-chih*) is inlaid near the base.

The material is translucent, homogeneous and compact, and shows, when a strong light is allowed to pass through it, transverse veinings and markings and many black metallic specks, apparently chromic iron.





742 CHIEN-LUNG (1736-1795) DISH OF ARTIFICIAL PLANTS (*P'en Ching*)

CHINA

Dimensions: 11.25 × 15.5 inches. 28.5 × 39.3 centimetres. Weight: 2 pounds 12.0 ounces. 1247.40 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: As described below



A saucer-shaped dish of greenish-white jade, with prominent rim round the base, mounted upon five feet of scrolled outline, and filled with artificial plants.

A cluster of three fabulous plants grows in the middle, with gilded stems bearing red-coral berries, standing up in the midst of gigantic lanceolate leaves carved out of mottled-green nephrite. These leaves overshadow three blossoming shrubs—a rose with flowers of red carnelian, buds of pink quartz, and leaves of green jade; a hibiscus with flowers of amethystine-quartz and amber and leaves of green jade; and a chrysanthemum with blossoms of white jade and red coral and leaves of green jade. The intervals are filled in with gold-leaved violets and two polyporus fungi of amber growing beside clumps of gold-leaved grass.

743  
744PAIR OF DISHES WITH PLANTS (*P'en Ching*)  
CHIEN-LUNG (1736-1795)

CHINA

Dimensions: Each 17.0 × 12.5 inches. 43.2 × 31.7 centimetres.  
 Weight: 1 pound 12.0 ounces. 793.80 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Mottled olive-green, white, and other colors

A pair of round dishes of mottled olive-green nephrite, mounted upon three feet of scrolled outline, and filled with some material covered with a layer of red-coral grains planted with shrubs and other flowers.

In No. 743 is a red-rose bush. The flowers have petals of red coral with a pearl mounted in the centre of each within a circlet of gold stamens; the buds are composed of single pieces of pink ground-glass with a mat surface. The leaves are carved out of thin laminae of mottled green jade. Below this grows an orchid with gold leaves and flowers of six petals—five of white jade and the other of red coral—round a pearl which is placed in the middle. Three small plants, apparently violets, have gold leaves upon each, but no flowers. A blue rock colored to imitate lapis lazuli rises up on the opposite side.

No. 744 has a similar rock and three violet plants, with the orchid replaced by a plant with lanceolate leaves of mottled yellow and green precious serpentine and berries of red coral. The flowering shrub is a chrysanthemum, with flowers of different colors grafted upon the same plant in Chinese fashion, and leaves of mottled green jade. There are four white flowers with florets of white jade and a red coral bead in the centre, three red flowers of coral and gold and a fourth with a pearl in the centre, and a single yellow flower with florets of amber encircling a coral bead.





745  
746 CHIA-CH'ING (1796-1820) PAIR OF DISHES OF FRUIT (*Kuo P'an*)

CHINA

Dimensions: 745=2.88 × 6.5 inches. 7.3 × 15.8 centimetres. Weight: 1 pound 3.286 ounces. 546.760 grammes  
746=3.12 × 7.0 inches. 7.9 × 17.7 centimetres. 1 pound 5.356 ounces. 605.440 grammes  
Hardness: 7.0. *Jadeite*  
Color: White with grayish tint veined and clouded with light emerald-green

A pair of saucer-shaped dishes, of the usual form, carved out of jadeite. They are filled with fruit and flowers piled upon a flat base decorated with the turquoise-tinted plumes of the kingfisher. Each dish contains branches of peaches, apples, *lichi* fruit, a Buddha's-

hand citron, and flowers carved out of white jade and amethyst blossoming upon the same stems, accompanied by leaves formed of moss-green jade.

747  
748 CHIA-CH'ING (1796-1820) PAIR OF VASES WITH FLOWERS (*Hua P'ing*)

CHINA

Dimensions: 747=15.0 × 10.0 inches. 38.1 × 25.4 centimetres. Weight: 2 pounds 6.0 ounces. 1077.30 grammes  
748=14.38 × 9.0 inches. 36.5 × 22.8 centimetres. 2 pounds 4.0 ounces. 1020.60 grammes  
Hardness: 7.0. *Jadeite*  
Color: The vases are white with mottlings of emerald-green and a very faint lavender tint

A pair of tall vases of quadrangular form, with the corners cut off vertically so that the section is hexagonal. With flattened base, the body expands upward toward the shoulder, which is sharply ridged, and then recedes upon each side of the neck to end in a slightly flaring mouth. Projecting upon each side of this neck are large handles carved in openwork with rectangular scrolls. The neck has upon the front and back the character for longevity (*shou*) carved in relief. The body is decorated in the same low relief upon the four

sides with floral sprays of peony, magnolia, and other plants. The receding angles are engraved with rectangular fret-scrolls of elaborate pattern.

Inserted within the vases are bouquets of blossoming shrubs, with the leaves of moss-green jade and turquoise, the flowers of white jade, coralline and amethystine quartz. These include blossoming sprays of the peach, pomegranate, plum, and hawthorn.

749 CHIA-CH'ING (1796-1820) VASE WITH FLOWERS (*Hua P'ing*)

CHINA

Dimensions: 14.25 × 8.0 inches. 36.2 × 20.3 centimetres. Weight: 1 pound 10.298 ounces. 745.550 grammes  
Hardness: 6.5. *Nephrite*  
Color: White of light greenish tint, and other colors

A three-lobed vase of white jade holding branches with flowers of the chrysanthemum in white jade, pink quartz, yellow agalmatolite, and lapis lazuli. There is also a branch of plum blossoms of yellowish-brown amber, and a rose-branch of pink quartz. The leaves of all are of mottled olive-green jade.

750 CHIA-CH'ING (1796-1820) POT WITH PLANTS (*P'en Ching*)

CHINA

Dimensions: 15.75 × 10.5 inches. 40.0 × 26.6 centimetres. Weight: 7 pounds. 3175.20 grammes  
Hardness: 6.5. *Nephrite*  
Color: A mottling of light and dark green with black specks

A rounded pot of six-lobed outline and section, of gilt bronze with champlevé border inlaid with blue enamel. Each of the six corners is mounted with an oblong plaque of white bowenite (a mineral often mistaken for jade) carved in an intricate openwork pattern with a large longevity character (*shou*) surrounded by floral scrolls of peony flowers, with bats, emblems of happiness, in the upper corners.

The pot is filled with a growing plant with large linear lanceolate

leaves of dark-green mottled jade which have in their midst a branch bearing three panicles of berries carved out of pink coral, looking like the fruit of the *Nandina domestica* (the sacred bamboo of China), a symbol of high rank. Underneath is a small rockery with the woody fungus (*ling-chih*) sprouting from it, with heads of characteristic shape carved of brownish-gray jade, and one of turquoise. One or two sprouts of jade, representing bamboo and a few violets with stained-ivory leaves, help to fill in the ground.



751  
752PAIR OF POTS WITH PLANTS (*P'en Ching*)

CHINA

CHIA-CH'ING (1796-1820)

Dimensions: 751=26.0 × 15.0 inches. 66.0 × 38.0 centimetres. Weight: 8 pounds 8.0 ounces. 3855.60 grammes  
 752=24.0 × 13.0 inches. 60.9 × 33.0 centimetres. 8 pounds 1.0 ounce. 3657.15 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with various other colors, as described below

Two pots, of glass and gilt bronze, filled with artificial plants of various kinds and material, and provided with handles beaded with light emerald-green jadeite.

The first contains a large tree of the *Magnolia yulan*, with flowers and buds of white jade blossoming before the leaves open. A chrysanthemum with flowers of pink quartz, and a *lichi* tree with petals of carnelian round the yellow-agate centre of the blossoms, spread their branches below; and the foreground is filled in with a peach tree with fruit of enamelled glass and blossoms of pink quartz, accompanied by an enamelled-glass orange and an ivory Buddha's-

hand citron, all with more or less natural foliage of olive-green jade, bluish-green turquoise, and light-blue enamel on metal.

The second contains a large peach tree with foliage of mottled olive-green jade, flowers and ripe fruit of pink quartz, and unripe fruit of a veined malachite. Underneath is a shrub of the *Olea fragrans* with tiny flowers of yellow and brown amber and leaves of blue enamel; also sprays of *Begonia discolor* with its four petals of pink quartz and its large irregular leaves made of mottled jade. From the background spring up flowers of light-yellow agalmatolite, and at the side a cluster of bamboo with leaves of turquoise.

753  
754PAIR OF POTS WITH FLOWERING PLANTS (*P'en Ching*)

CHINA

CHIA-CH'ING (1796-1820)

Dimensions: 753=16.5 × 9.0 inches. 41.9 × 22.8 centimetres. Weight: 5 pounds 6.0 ounces. 2438.10 grammes  
 754=16.75 × 10.0 inches. 42.5 × 25.4 centimetres. 5 pounds 2268.0 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with shades of green, and other colors as described below

Two rounded gilt-bronze pots, of six-lobed outline and foliated rims, standing on three feet, the sides decorated with peonies in champlevé enamel.

One contains a *Magnolia yulan* tree in full blossom rising from a soil represented by fine grains of coral, with flowers of white jade surrounded by chrysanthemums of red coral, reddish and yellow carnelian, and pink quartz, with leaves of olive- and sage-green jade, on one side, and with a pink-coral-berried shrub of the *Nandina do-*

*mestica* with turquoise leaves, and a branching stem of the *Polyporus lucidus* with fungus heads of pink quartz, on the other side.

The other has similar plants of *Polyporus lucidus* and *Nandina domestica* with white chrysanthemums of jade and dark-blue ones of lapis lazuli round two trees—one a plum with flowers and buds of amber, the other a peach with flowers and buds of pink quartz, and leaves of olive- and sage-green jade and stained ivory.

755

SEVENTEENTH CENTURY

## WINE-CUP

INDIA

Dimensions: .78 × 3.12 inches. 2.0 × 7.9 centimetres. Weight: 1.415 ounces. 40.124 grammes  
 Specific gravity: 2.9513; hardness: 6.5. *Nephrite*  
 Color: White with the merest suggestion of a greenish tint

A shallow wine-cup of eightfold fluted form with corresponding rim, the vertical ridges between the flutings extending inside down to the bottom of the little cup. A loop-handle projects boldly from the edge and is carved in the shape of a leaf with the tip recurved below. This dainty little cup is made of a remarkably pure piece of trans-

lucent, homogeneous and compact material. When a strong light is allowed to pass through it, the structure is seen to be made up of very translucent and of white, almost opaque particles having much the appearance of rice in milk.

756

SEVENTEENTH CENTURY

## BOWL

INDIA

Dimensions: 2.22 × 6.25 inches. 5.6 × 15.9 centimetres. Weight: 6.204 ounces. 175.896 grammes  
 Specific gravity: 2.9506; hardness: 6.5. *Nephrite*  
 Color: White with the merest suggestion of a greenish tint

A bowl of charming form and extremely delicate workmanship and polish. It is of almost egg-shell thinness, and print in contact with it can easily be read through it. The upper portion is fluted into eight slightly bulging lobes so as to make a correspondingly indented rim. The inside exhibits the concavities of the flutings, the separating vertical ridges fading away before reaching the bottom of the bowl. It is poised upon a circular rimmed foot, which slightly projects toward the base, and is provided with two handles carved in openwork with simple spiral ornament.

For purity of material and color, beauty of texture, and high polish this piece is unsurpassed. When a strong light is allowed to pass through it, it has almost the appearance of a very thin piece of camphor.





## 757 SEVENTEENTH CENTURY

## BOWL

INDIA

Dimensions:  $2.44 \times 6.94 \times 4.5$  inches.  $6.2 \times 17.6 \times 11.4$  centimetres. Weight: 9.018 ounces. 255.674 grammes  
 Specific gravity: 2.9555; hardness: 6.5. *Nephrite*  
 Color: White with an exceedingly faint greenish tint

An oval bowl of good form and perfectly finished workmanship, decorated with floral designs and foliated bands of ornament. The body is composed of four lobes and the upper rim is correspondingly fluted. The four indentations of the outer surface are opposite vertically ridged lines which project within and intersect at the bottom of the bowl. The foot is carved in the shape of a formal flower with four small sepals radiating from a central cross-hatched stem, and four large broad petals fluted and recurved at the tips so as to form an interrupted rim round the foot. The two handles which project above are carved in openwork in the shape of flowers with spiral stems and uptilted formal leaves.



The outside of the bowl is decorated in slight relief with two bands of foliated design—a band of broad striated leaves with recurved edges round the base, and a band of smaller foliations encircling the top, with alternate oval leaves and trefoils pendent upon the stems, which unite in graceful curves, the concavities of which are marked with dots representing spiral leaf-buds.

This exquisite gem of Indian handicraft is of remarkably pure material, translucent, homogeneous and compact. When held up before the light its great beauty is very apparent. When so viewed it presents the appearance in part of rice in milk.

## 758 SEVENTEENTH CENTURY

## LOW DISH

INDIA

Dimensions:  $1.16 \times 3.91$  inches.  $2.9 \times 9.9$  centimetres. Weight: 2.844 ounces. 80.620 grammes  
 Specific gravity: 2.9635; hardness: 6.5. *Nephrite*  
 Color: White

A small shallow dish, with a slightly spreading rim, a round body surrounded outside with a border of scattered pointed leaves carved in slight relief, and a base fashioned outside in the form of a formal flower with four sepals round the button-like stalk and four wide-ribbed petals spreading to its circumference. The polish is perfect.

The material is translucent, and the bowl is so thin that print in contact with it can be read through it. When held before a strong light some delicate cloudings may be noted, and in the base there is a small vein with darker flecking.

## 759 SEVENTEENTH CENTURY (?)

## FLORAL VASE

INDIA

Dimensions:  $2.25 \times 4.41 \times 4.38$  inches.  $5.7 \times 11.2 \times 11.1$  centimetres. Weight: 5.342 ounces. 151.448 grammes  
 Specific gravity: 2.9710; hardness: 6.5. *Nephrite*  
 Color: White with a very faint brownish tint

A vase, of light, elegant form and graceful outline, with a rounded body of oval section, a low foot of floral design, and a long neck springing from the body to terminate in a broad flaring mouth with foliate rim. The body is encircled above and below with bands of conventional foliated design carved in slight relief, the rest of the surface being filled with a wavy band of lines curving diagonally downward. The foot is designed in the shape of a chrysanthemum, with three concentric lines of florets arranged so that the outer ring forms the interrupted rim upon which the vase stands. The neck is also, like the foot, carved longitudinally in eight flutings so as to simulate the same flower, the interior being carved into as many corresponding vertical ridges and the mouth encircled by eight foliations, broader than those surrounding the foot, but of similar outline. Each of the two loop-handles which spring from the sides of the neck terminates above in a chrysanthemum bud, flanked by two leaves, the buds being tipped with inlaid rubies. Movable rings hang suspended from the loop-handles.

The material is translucent, homogeneous and compact, and, with the exception of a few veins that run transversely across the piece, is remarkably free from impurities. When a strong light is allowed to pass through it, it has a mottled appearance produced by tiny specks of nephrite of very fine texture. The vase itself is of egg-shell thinness and perfect polish.



## 760 SEVENTEENTH CENTURY

## RING-BOX

INDIA

Dimensions:  $1.38 \times 3.34 \times 3.16$  inches.  $3.5 \times 8.5 \times 8.0$  centimetres. Weight: 2.234 ounces. 63.320 grammes  
 Specific gravity: 2.9747; hardness: 6.5. *Nephrite*  
 Color: White with greenish tint

A small covered box of three compartments in the form of three compressed plums (or some similar fruit) held together by the twigs

and leaves of a leafy branch which projects to form a handle, and hollowed out to form a receptacle for finger-rings, studs, or the like.





The box proper is decorated underneath with leaves carved in slight relief, and is flanged on the edges to receive the three upper segments of the fruit which form the cover and are similarly decorated on top with plum blossoms and held together by a twig, a

leaf, and an upright bud which serves as a handle. The whole is very daintily cut and polished, and is so thin and of such translucency that print in contact with it can easily be read through it.

The mineral is remarkably pure and resembles a pale transparent horn. There is a delicate clouding on the box, and a slight veining in one of the segments of the cover that is probably a more opaque form of the same mineral.

761

SEVENTEENTH CENTURY

SHALLOW BOWL

INDIA

Dimensions: .56 × 2.75 inches. 4.0 × 7.0 centimetres. Weight: 6.708 ounces. 190.188 grammes  
Specific gravity: 2.9788; hardness: 6.5. *Nephrite*  
Color: Very light opalescent yellowish-gray

A thin shallow bowl, of floral design, decorated with chrysanthemum flowers. The rim is of wavy foliated outline, with six slight indentations at regular intervals which correspond to grooves extending vertically down the back of the bowl till they are lost near the circular rim which encircles the foot. The interior of the bowl is divided by corresponding ridges into six broad flutings which are carved in slight relief with upright formal sprays of chrysanthemum flowers. The bottom of the bowl is studded with a large



chrysanthemum blossom with an etched cross-hatched centre surrounded by two concentric rings of florets or petals composed of broad leaves alternating with twin narrow leaves, and so breaking the monotony of the ordinary conventional design.

The material is translucent and compact, and shows very clearly its grayish texture when a strong light is allowed to pass through it, as well as many inclusions that are a trifle darker in color.

762

SEVENTEENTH CENTURY

CHRYSANTHEMUM BOWL

INDIA

Dimensions: 2.72 × 8.28 inches. 6.9 × 21.0 centimetres. Weight: 9.930 ounces. 281.536 grammes  
Specific gravity: 2.9515; hardness: 6.5. *Nephrite*  
Color: Light sage-green

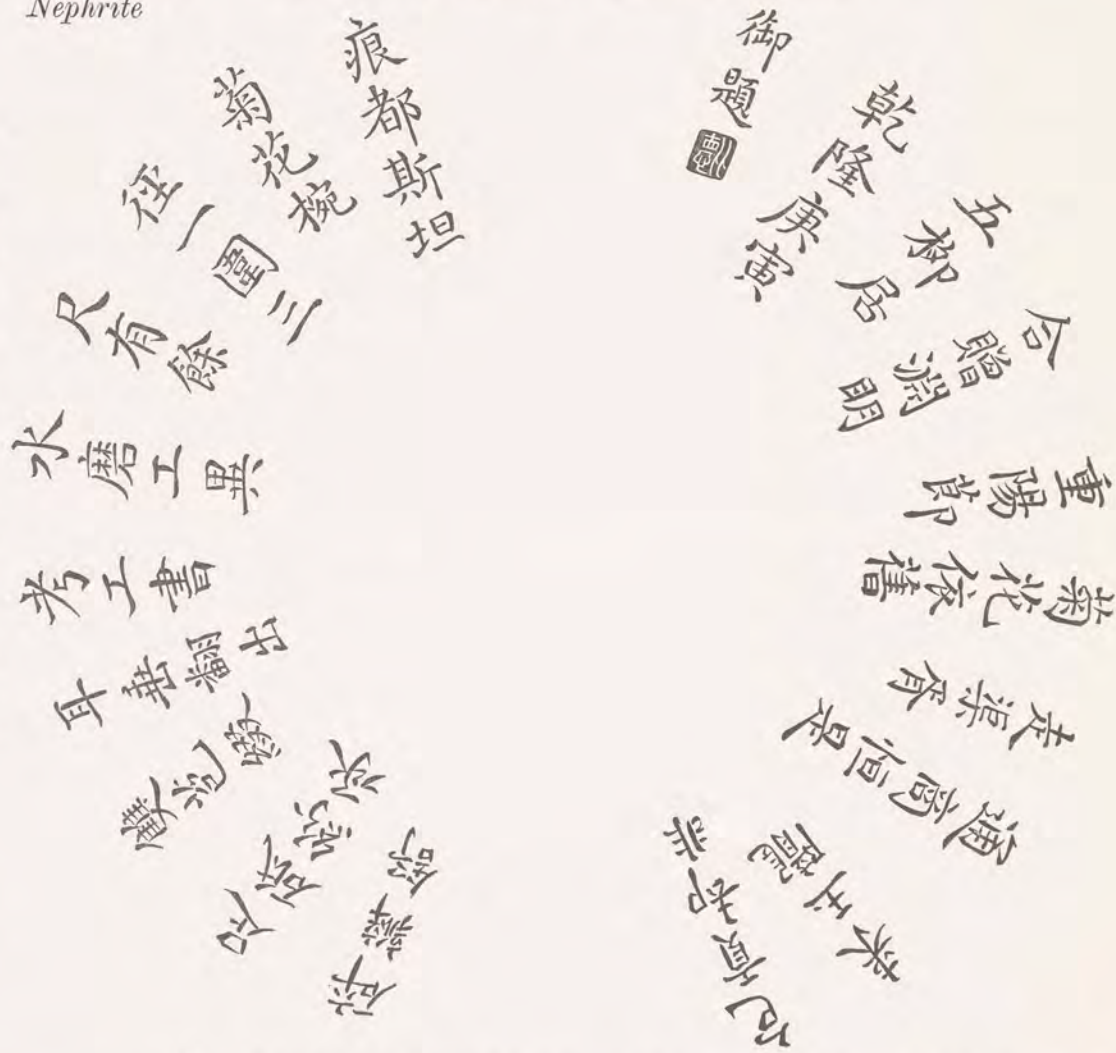
A fluted bowl, slightly turned out at the rim, with a low foot carved in the conventional chrysanthemum pattern, and with all its decorative details derived from the same flower. The flutings, twelve in number, radiate inside from the centre of the piece. They disappear outside near the foot, above which is a band of leaves in low relief pointing upward, one for each fluted surface. The circular, slightly spreading foot is cut with a chrysanthemum having two circles of florets pointing outward, and a third nearly erect surrounding the middle, the detail of which is naturally carved. The two loop-handles are buds hanging down to meet the projected tip of one of the leaves elongated from the band below. The external surface is covered with an inscription in lightly engraved Chinese characters of perfect form and style, being rhyming stanzas of verse, one line on each fluting, composed and written by the Emperor Chien-lung, with his autograph signature and seal affixed:

"This bowl of chrysanthemum pattern from Hindustan,<sup>1</sup>  
Measuring about a foot across and more than three feet  
round,<sup>2</sup>  
Is fashioned in a style different from that of our ancient  
work.<sup>3</sup>

<sup>1</sup> Transcribed phonetically by the four characters Hin-tu-ssu-tan.

<sup>2</sup> If this be not poetic license, the emperor must be measuring with the ancient foot of the Chou dynasty, as the diameter of the bowl is really little over eight inches.

<sup>3</sup> Literally, "from that of the K'ao kung shu," the name of the ancient book on handicrafts of the Chou dynasty (1122-249 B. C.).









No. 762

CHRYSANTHEMUM BOWL

India

Seventeenth Century

Nephrite











The handles hang down suspended like two swelling buds,  
And the foot is carved beneath with serried ranks of  
petals.  
Such offerings come to us not only as tribute from Yü-lung,<sup>1</sup>  
But are brought back also by merchants from far-away Ch'ü-  
hsü.<sup>2</sup>  
The chrysanthemum is still, as of old, the flower of the autumn  
holiday.<sup>3</sup>

And this is a fitting gift for Yuan-ming<sup>4</sup> in his Five-willow  
Retreat.  
"Written by the Emperor Ch'ien-lung in the cyclical year  
k'eng-yin.<sup>5</sup> Sealed, *Pi-tê*."<sup>6</sup>

The material of this remarkably beautiful bowl is translucent,  
homogeneous and compact. The structure of the original boulder is  
visible on two sides, and a transverse stratification is apparent.

## 763 SEVENTEENTH CENTURY

## CHRYSANTHEMUM DISH

INDIA

Dimensions: 1.47 × 6.53 inches. 3.7 × 16.6 centimetres. Weight: 7.591 ounces. 215.206 grammes  
Specific gravity: 2.9673; hardness: 6.5. *Nephrite*  
Color: Dark sage-green

A small deep circular dish of fluted outline, modelled after the con-  
ventional chrysanthemum pattern. There are ten flutings which  
radiate inside from the middle of the dish and broaden toward its  
circumference to form a boldly indented rim. The outer surface of  
the dish exhibits the structure of the flower with its three concentric  
rings of florets, of which the two inner circles, with striated segments

recurved at the tips, project to form a flat support for the dish, while  
the outer circle spreads upward to form the fluted rim.

The material is translucent, homogeneous and compact. When a  
strong light is allowed to pass through it, numerous inclusions that  
are a trifle darker and more opaque become visible.

## 764

## MIRROR-FRAME

SEVENTEENTH CENTURY

INDIA

Dimensions: 11.22 × 6.0 × .41 inches. 28.5 × 15.3 × 1.0 centimetres.  
Weight: 8.886 ounces. 251.927 grammes  
Specific gravity: 2.9746; hardness: 6.5. *Nephrite*  
Color: Dark sage-green

A mirror-frame carved in openwork with intricate floral patterns and a large ovoid depression in  
the centre in which the mirror would be set. Below it has a broad handle of oval form, con-  
stricted in the middle, which is also carved in openwork. Both of these floral designs are en-  
circled by a frame carved on each side with a scalloped band of ornament. This is interrupted  
at the top, where it is engraved with a serrated band below a shield-like protuberance which  
projects upward, perforated with twelve large holes for the insertion, no doubt, of jewels.

The material of this piece is remarkably free from all impurities. Four darker markings that  
are evidently due to weathering or staining may be noted.

## 765

## SWORD-GUARD

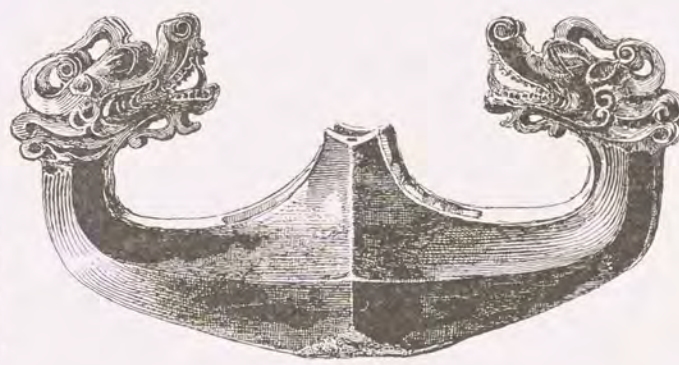
SEVENTEENTH CENTURY

INDIA

Dimensions: 2.0 × 4.03 × 1.19 inches. 5.1 × 10.2 × 3.0 centimetres.  
Weight: 3.808 ounces. 107.970 grammes  
Specific gravity: 3.0783; hardness: 6.5. *Nephrite*  
Color: Very dark greenish-black

A sword-guard of Indian form and design, terminating at each end in a dragon's head.

The material is subtranslucent, very homogeneous and remarkably compact, and with  
a vein-like fracture running parallel with the width of the piece. It has a microstructure  
caused by a nearly uniform mixture of amphibole fibres, in fan-shaped divergent clusters,  
sometimes approaching a spherulitic arrangement.



<sup>1</sup> Yü-lung, contraction of Yü-rung-k'ash, a river of Khotan in Chinese Turkistan which  
produces jade.

<sup>2</sup> Anciently pronounced Khusu, the name of a country mentioned in ancient Chinese  
annals as situated far to the west of China. Used here metaphorically for India.

<sup>3</sup> The floral emblems of the four seasons are: the peony, of spring; the lotus, of  
summer; the chrysanthemum, of autumn; and the plum, of winter.

<sup>4</sup> Tao Yuan-ming, who lived 365-427 A.D., was a scholar and dilettante celebrated  
for his distaste for official cares. Appointed a magistrate of P'eng-tse, he resigned his  
post in less than three months in preference to "bending his back" on the arrival of a  
superior functionary, remarking that it was "not worth while to crook the loins for the

sake of five measures of rice." He afterward signed himself as the "Five Willows  
Scholar," from five willows which grew before the door of his retreat, where he occupied  
himself for the remainder of his days with versification, the pleasures of the wine-cup,  
and the harmony of the lute. He is often depicted in Chinese art as "the admirer of  
the chrysanthemum," with one blossom in his hand and some more of his favorite  
flowers growing in pots beside him.

<sup>5</sup> 1770 A.D.

<sup>6</sup> The two antique characters engraved in relief in a square intaglio mean, "Compared  
with virtue," a synonym of jade, which is supposed to have similar qualities, as described  
by Confucius in the oft-quoted passage from the ancient Book of Rites.



A chemical analysis by Foote, with reduction by Clarke, gave the following results:

	NaAlSi <sub>2</sub> O <sub>6</sub>	R' <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub>	Nephrite	
Silica . . . . .	55.51	1.59	4.35	49.57
Alumina . . . . .	1.72	.67	1.05	
Ferric oxide . . . . .	1.33		1.33	
Ferrous oxide . . . . .	7.69			7.69
Magnesia . . . . .	18.80			18.80
Lime . . . . .	13.17			13.17
Soda . . . . .	.41			
Water . . . . .	1.82			.55
	100.45	2.67	6.73	89.78

	Abstract
Nephrite . . . . .	89.78
NaAlSi <sub>2</sub> O <sub>6</sub> . . . . .	2.67
R' <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub> . . . . .	6.73
Excess water . . . . .	1.27
	100.45

The excess of alumina and ferric oxide over the molecule NaAlSi<sub>2</sub>O<sub>6</sub> is reckoned as the silicate (AlFe)<sub>2</sub>(SiO<sub>3</sub>)<sub>3</sub>. This may be regarded also as part of the nephrite.

766

VERY OLD

BOWL

INDIA (?)

Dimensions: 1.69 × 5.41 inches. 4.3 × 13.7 centimetres. Weight: 4.501 ounces. 127.600 grammes  
Specific gravity: 2.9483; hardness: 6.5. *Nephrite*  
Color: Light gray sprinkled with darker gray and brown specks

A round shallow bowl with upright rim and low circular foot. It is decorated outside with two bands of ornament consisting of triangular foliations executed in slight relief, and regularly incised so as to show through on the inner surface in the form of a doubly serrated border encircling the bowl above and below. The rim is lacquered and painted with a delicate pattern of minute floral design in gold.  
The material is translucent, homogeneous and compact, with many minute inclusions that are a trifle grayer and more opaque than the mass and impart the color to and make up the vein-structure that is seen running transversely across the bowl when it is held up against a strong light. It was apparently to cover an indentation and other defects in the material that the lacquer ornamentation (now much worn) was originally applied, and probably in China. Otherwise both the design and the execution are in Indian style.

767

PRIOR TO NINETEENTH CENTURY

BOWL

INDIA

Dimensions: 3.03 × 8.12 inches. 7.7 × 20.6 centimetres. Weight: 12.429 ounces. 352.366 grammes  
Specific gravity: 2.9499; hardness: 6.5. *Nephrite*  
Color: Light gray heavily flecked with black

A large plain bowl of well-rounded form, with a circular band-like rim round the foot and two flat handles of spiral outline projecting at the rim.  
The material is translucent, homogeneous and compact, and shows a marked stratification running transversely across the bowl. This is indicated very clearly by the numerous inclusions of a black metallic mineral, apparently chromite, which take the form of concentric and more or less parallel bands of varying width. But for the presence of these inclusions of iron pyrites crystals in such profusion, the bowl would be white. The Chinese compare this particular effect to paper sprinkled with a brush filled with ink.

768

SEVENTEENTH CENTURY

JEWELLED BOX

INDIA

Dimensions: 2.56 × 6.38 × 4.38 inches. 6.5 × 16.1 × 11.1 centimetres. Weight: 1 pound 5.991 ounces. 623.450 grammes  
Hardness: 6.5. *Nephrite*  
Color: White with faint greenish tint

A box, of oval outline and rounded surface, with an oval rim projecting slightly round the foot. The upper border is bevelled externally to fit the cover, which is bevelled inside. The box is plainly polished. The cover is decorated outside with scrolls in gold inlaid work set with large rubies and emeralds. A rose-shaped flower occupies the centre, with six petals made of rubies, from the intervals of which radiate in curving lines six stems bearing large fuchsia buds, each with a bifid calyx of emerald enclosing a large oval ruby which has a dentated outline of gold. The outer edge of the cover is surrounded by a gold line composed of a series of curves, starting above from a ring of alternate trefoils and single leaves which extends all round. The trefoils are conventional flowers composed of three carved rubies joined to the stem by an emerald calyx; the single green leaves are large emeralds fashioned in that shape. This makes a total of thirty-six rubies and twenty-two emeralds used in the decoration of the box.  
The material of both box and cover is translucent, homogeneous and compact, and is of remarkable purity. Even when viewed in a strong light, all texture seems absent and only a faint clouding is visible.  
In 1851 this specimen was exhibited by the Indian Government at the Crystal Palace, London, England. It was afterward sold to Arthur Wells, Esq., of London, and purchased by its present owner when the Wells Collection was disposed of in 1882.



## 769 SEVENTEENTH CENTURY JEWELLED DAGGER-HANDLE

INDIA

Dimensions:  $5.03 \times 2.44 \times .88$  inches.  $12.8 \times 6.2 \times 2.2$  centimetres. Weight: 9.603 ounces. 272.250 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint greenish tint

A dagger-handle of curved form with rounded end, base of foliated outline, and inner surface carved with three slight horizontal ridges; decorated with scroll-work in gold of floral pattern inlaid with large diamonds, rubies, and emeralds. The convexity of the distal end, which is a trifle darker than the rest of the hilt, is set with a long line of carved emeralds, gradually diminishing in size, and placed close together to form a floral stem which ends in a trefoil composed of three emeralds cut in the shape of veined leaves. From the stem proceeds a convolution of small branches bearing lilies and buds conventionally designed, with petals of carved rubies encircling a

diamond in the middle, the flower buds a simple ruby or diamond, and the leaves carved out of emeralds. The principal end is decorated all round with floral scrolls of similar design, excepting the absence of the stem in the middle. All told, the jewelled setting includes twenty-one diamonds (one has dropped out), fifty-three rubies, and thirty-nine emeralds.

The material is translucent, homogeneous and compact, but showing, when a strong light is allowed to pass through it, only a few tiny markings that are somewhat opaque and whiter than the surrounding nephrite.

770 SEVENTEENTH CENTURY PAIR OF JEWELLED ARMLETS  
771

INDIA

Dimensions:  $3.16 \times .59$  inches.  $8.0 \times 1.5$  centimetres. Weight: 770=3.235 ounces. 91.710 grammes  
 771=3.344 ounces. 94.790 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Pearly-white

A pair of jewelled armlets of similar form and design. The ring of each is composed of jade inlaid with gold in floral design set with rubies, emeralds, and rose-cut diamonds.

In the middle of No. 770, opposite the handle, a lily-shaped flower is pinned, with a diamond in the centre encircled by six petals of alternate rubies and emeralds. A floral scroll of spirally convoluted pattern winds round from this, in both directions, so as to cover the outer surface of the bangle with a triple line of small flowers, the central one of which is inlaid with diamonds, and two side lines set alternately with rubies and emeralds. The snap, which fills up the remaining fourth of the circle, is composed of two *azhdar*, or dragons'-heads, of serpent form, made of gold decorated with brilliant rich green, red, and blue Jeypore enamel set with diamonds, rubies, and emeralds. The tongues are made of the rubellite variety of tourmaline probably from the Shan Mountains, the eyes are emeralds, and a ruby is set in each of the ears. A rose-diamond is mounted in an oblong panel at the point where the noses of the dragons meet,

another on the crowns of their heads, which are also, as well as the collars round their necks, set with rubies and emeralds.

In No. 771 the floral pattern which winds round the outside of the bangle differs slightly from that on No. 770 in being of closer design and of more formal upright character. It is inlaid with small jewels, but more in number, and arranged similarly, with a line of rose-diamonds in the middle, flanked by rows of alternate rubies and emeralds on either side. The collar also has six panels set with rubies, while there are only three in No. 770.

All told, No. 770 is set with twenty-two diamonds, twenty rubies, and seventeen emeralds; No. 771 has twenty diamonds, thirty-two rubies, and twenty-seven emeralds.

The material of both is translucent, homogeneous and compact, and, when viewed in a strong light, is seen to be made up of bands of an almost opaque white and a translucent white nephrite, No. 771 presenting a slightly turbid appearance.

## 772 SEVENTEENTH CENTURY JEWELLED BOWL

INDIA

Dimensions:  $1.88 \times 4.06$  inches.  $4.7 \times 10.3$  centimetres. Weight: 6.034 ounces. 171.090 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Light gray with very faint greenish tint

A bowl, of compressed form, with straight upright rim surrounded by a prominent circular band round the foot. The rim is defined outside by a line of gold, and a similar line encircles the bowl near the base. The broad band enclosed by these lines is decorated above and below with scrolled chains of floral design. These connect by regular curves the two rings composed of conventional flowers and buds, arranged alternately, which point downward from the top and upward from the bottom. The flowers are of trefoil design set alternately with pearls and rubies, the buds of single diamonds or emer-

alds. The sparse foliage is indicated by occasional leaves of gold inlay. There were used in the jewelling thirty pearls, thirty rubies, ten diamonds, and nine emeralds.

This piece was formerly the property of Bahadur Shah, King of Delhi.

The material is translucent, homogeneous and compact, showing, when viewed through the side, a wavy, faintly fractured series of horizontal lines.



773 SEVENTEENTH CENTURY

## JEWELLED DAGGER-HANDLE

INDIA

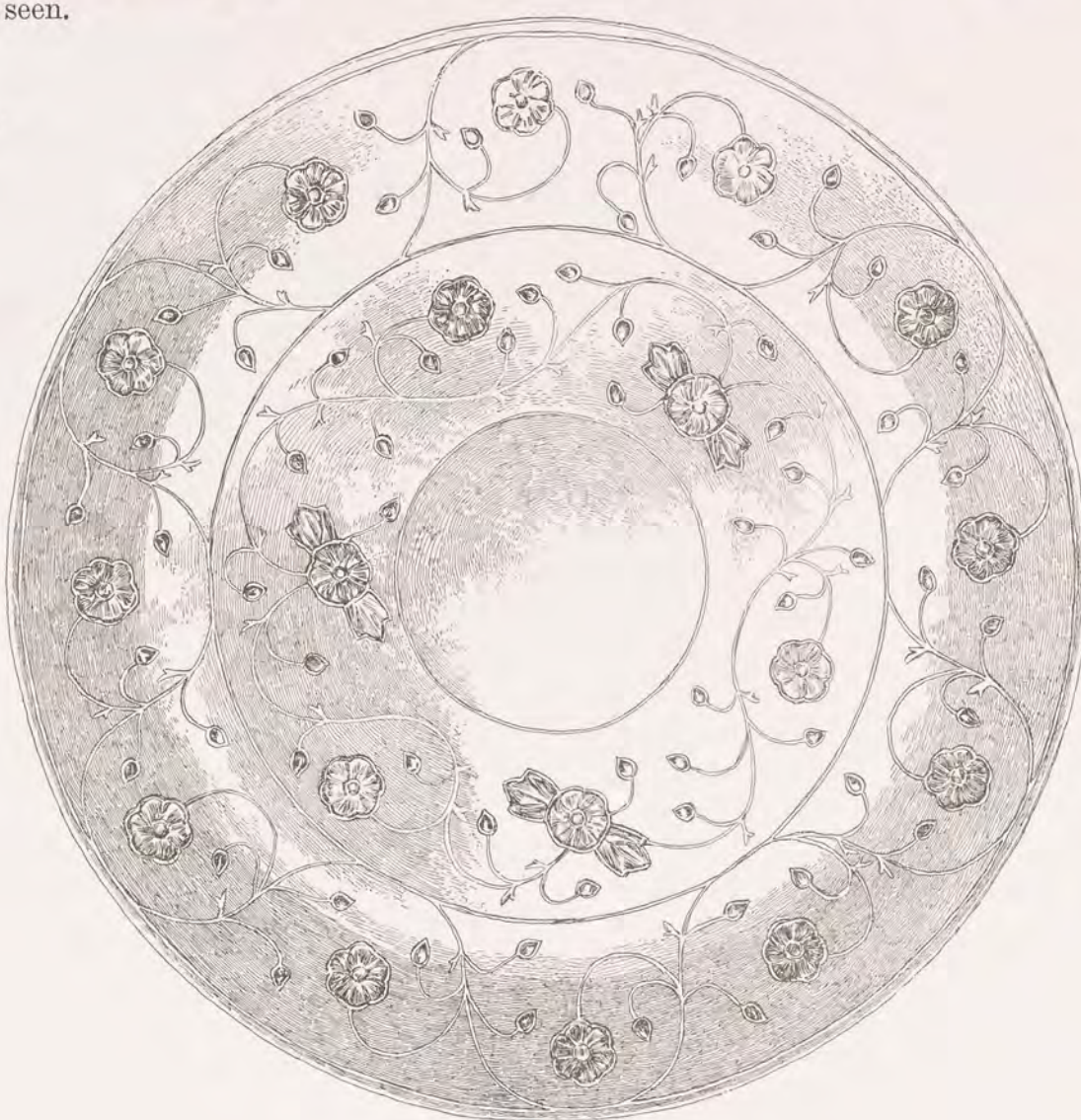
Dimensions: 4.72 × 2.22 × .78 inches. 12.0 × 5.6 × 2.0 centimetres. Weight: 8.041 ounces. 227.990 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with a faint bluish tint

A dagger-handle of curved form, with rounded end, and base of foliated outline, decorated in gold with floral scrolls of conventional lilies of striking and beautiful design, spreading upward from the base on the front and back, and winding round the top in close convolutions so as to cover nearly the whole surface of the jade with a network of jewelled sprays. The convexity at the end is inlaid with a line of five very large emeralds carved in the form of buds. The middle of the large full-blown flower on each side of the round extremity is set with a diamond; the rest of the flowers, buds, leaves, are all composed of emeralds and rubies carved in appropriate shapes, making in all two diamonds, thirty-three emeralds, and eighty-two rubies.

When a strong light is allowed to pass through the piece a veining that runs transversely across the lower part of the whiter portion is seen.



774



## JEWELLED PLATE

SEVENTEENTH CENTURY

INDIA

Dimensions: .47 × 8.94 inches. 1.2 × 22.7 centimetres.  
 Weight: 15.428 ounces. 437.400 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Very light translucent sage-green

A round flat plate with a circular band-like rim at the foot. The surface is decorated in two broad concentric bands defined by gold lines with freely waving floral scrolls. The stem, a thin spiral line of gold, gives off on each side a succession of small branches bearing flowers at regular intervals, small red and green buds, and tiny gold leaves. The flowers, of rose-like outline, are carved out of discs of chalcodony foiled and underlaid with color, the border formed of single rubies and emeralds. Three of the large flowers in the inner band have two broad leaves of moss-green jade projecting on either side. The jewels include eighteen chalcodony flowers, twelve emeralds, and forty-four rubies. The material is translucent, homogeneous and compact.

775

## JEWELLED JAR AND COVER

SEVENTEENTH CENTURY

INDIA

Dimensions: 4.22 × 2.62 inches. 10.7 × 6.6 centimetres.  
 Weight: 7.188 ounces. 203.780 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Light olive-gray

A jar of bulbous form, decorated with floral designs set with jewels. It is mounted upon a low spreading foot carved underneath with three concentric rings of florets or petals to represent a chrysanthemum. The body, bulging below, is constricted at the shoulder, and flares again slightly toward the mouth, just below which it is surrounded by a projecting ring. The cover, of rounded outline, is bevelled externally to fit the mouth, and surmounted by a globular knob. This knob is crowned with a gold flower set with one brilliant-cut and six rose-cut diamonds. The surface of the cover is decorated with an encircling band or floral spray of jewelled flowers of many colors, comprising six flowers, all different, indicated severally by an emerald, a sapphire, a pearl, a ruby, a turquoise, and a cat's-eye. A band of trefoil flowers composed of many-colored jewels, connected at their base by a line of convolutions, surrounds the rim of the jar above and below. The body between these borders is decorated by four upright sprays, branching at the sides, of conventional flowering plants. They are of two patterns arranged alternately round the jar. The one, with stem composed of emerald plates and closely serried rows of emerald leaves, has a bud at the tip and





flowers of either rubies or pearls. The other, with stem outlined in gold and sparsely set emerald leaves, ends above in a large flower like a lily and bears blossoms either of zircon or of sapphire. The body and neck of the vase are ornamented with one hundred and fifty-two jewels, comprising fifteen pearls, twelve turquoises, twelve corals, twenty-three emeralds (exclusive of forty-four emerald plates in the stems of the flowers), twenty-seven rubies, thirty-two sap-

phires, and thirty-one zircons; or a total of two hundred and nine including the emerald plates and the jewels on the cover.

The material is translucent, homogeneous and compact, showing, when a strong light is allowed to pass through it, many inclusions that are opaque and are evidently nephrite of a slightly darker olive-color. Several vein-like fractures are to be noted.

## 776 SEVENTEENTH CENTURY

## JEWELLED BOX

INDIA

Dimensions: .91 × 2.69 × 2.69 inches. 2.3 × 6.8 × 6.8 centimetres. Weight: 5.480 ounces. 155.370 grammes  
Hardness: 6.5. *Nephrite*  
Color: Gray with faint greenish tint

A flat-bottomed box of quadrilateral shape, with rounded corners and deeply indented sides, so that its outline is four-lobed. From the indentations in the sides proceed vertical partitions which cross at right angles in the middle so as to divide the box into four compartments. The flat cover is encircled by a narrow rim which projects downward from its edge to fit upon the box, which is flanged all round for its reception. The box as well as the cover is decorated with floral sprays of formal but charming design representing roses. The stems are delicately outlined in gold, the roses and buds composed of rubies and the leaves of emeralds. The principal jewels are cut *en cabochon* so that they stand out prominently, adding much to the richness of the decoration. The box is surrounded by a broad band, outlined in gold, filled with a wavy chain of roses and leaves, placed alternately at regular intervals. The rim of the cover is studded all round with a line of rubies. Its top is decorated in the middle with four emerald leaves, arranged in the shape of a cross, and from the tip of each leaf proceeds a line of gold as far as the



indentation in the rim, where it joins a similar line surrounding the curved edge. The cover is thus divided into four panels, which correspond to the four compartments of the box. Each of these panels is filled with a similar spray of roses, consisting of three full-blown blossoms on separate stems, with a single ruby bud in their midst, and five emerald leaves formally arranged, two near the top of the smaller bouquet and three underneath.

The jewelling of this richly ornamented box includes in all two hundred and three rubies and forty emeralds, viz.: eighty-four rubies and sixteen emeralds on the box, eighty-four rubies and twenty-four emeralds on the top of the cover, and thirty-one rubies around its edge. (The rim of the cover is broken in two places and five rubies are missing. The central jewel on the cover is also missing. These are not included in the above numbers.)

The nephrite of which the box is made is translucent, homogeneous and compact, and shows very little veining when a strong light is allowed to pass through it.

## 777 SEVENTEENTH CENTURY

## JEWELLED BOX AND TRAY

INDIA

Dimensions: Box=2.34 × 2.34 × 1.28 inches. 5.9 × 5.9 × 3.2 centimetres.  
Tray=5.22 × 5.22 × .41 inches. 13.2 × 13.2 × 1.0 centimetres. Total weight: 11.903 ounces. 337.470 grammes  
Hardness: 6.5. *Nephrite*  
Color: Box=Pearly-white  
Tray=Light sage-green

A box of quadrangular shape with rounded corners and very deeply indented sides, divided into four compartments by internal partitions crossing at right angles in the middle. The bottom of each indentation is strengthened by a vertical sharp ridge. The box as well as the cover is encrusted with rubies set in fine gold with floral designs taken from the chrysanthemum. The cover, of rounded four-lobed outline corresponding to the box, is surmounted with a knob-like handle carved in the form of a chrysanthemum bud, with a large fine ruby inserted in the middle. From this project four long emerald leaves of the same plant, which spread in every direction till their tips reach the indentations in the rim of the cover. From the points of junction of these leaves proceed four slim emerald stalks, so as to display an eight-leaved full-blown blossom on each of the four lobes of the cover. Every one of these chrysanthemum blossoms has a ruby, cut *en cabochon*, in the middle, encircled by eight petals of carved rubies and fringed by the eight sepals of the calyx made of emeralds. The edge of the rim of the cover is bordered by a line of small oval emeralds. The lower rim of the box is defined by a similar border of emeralds, from which projects upward a line of

single chrysanthemum buds of conventional pattern with emerald stalks and ruby trefoils.

The tray, of similar quadrilobate shape, has a raised foliated rim in the middle, within which the box fits. The rim and the indentation ridges are defined by lines of flat semicircular rubies, and the field by three concentric curves of pear-shaped rubies, making a total of thirty-six rubies and sixty-four emeralds on the box, thirty-seven rubies and one hundred and four emeralds on the cover, and one hundred and seventy-two rubies on the tray, or a grand total of two hundred and forty-five rubies and one hundred and sixty-eight emeralds. The bottom of the tray has a central medallion composed of four rounded scalloped leaves, and outside them a double line of gold inlaid tracing.

The material throughout is translucent, homogeneous and compact. The box and cover show inclusions of an opaque substance, probably nephrite, that is whiter than the mass. When a strong light is allowed to pass through the tray, numerous very minute dust-like brilliant black inclusions, that are apparently chromic iron, are seen.



## 778 SEVENTEENTH CENTURY JEWELLED DAGGER-HANDLE INDIA

Dimensions:  $4.81 \times 2.69 \times .88$  inches.  $12.2 \times 6.8 \times 2.2$  centimetres. Weight: 9.072 ounces. 257.180 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Sage-green with a patch of dead-oak-leaf

A dagger-handle beautifully encrusted with emeralds and rubies, with the base of foliated outline ending in two projecting spirals and the curved end beautifully carved in the shape of a horse's head. The right side of the neck, which is marked with a brown patch, is carved with the mane hanging in curled locks of a natural brown color. The eyes are fine rubies, the upper part of the neck is studded with a line of eleven smaller rubies, and the halter, or head-stall, is veneered with bands of about thirty oblong plates of rubies enclosed within the gold setting. The guard end of the hilt is decorated on the front and back with identical floral scroll designs delicately outlined in gold.

The pattern represents interlacing sprays of the champac (*Michelia Champaca*), of the order *Magnoliaceae*, the flowers composed of three ruby petals springing from an emerald base, the buds formed each of a single ruby. The jewels include eight emeralds and seventy-seven rubies.

The material is translucent, homogeneous and compact, with a vein-marking on the neck of the horse that is slightly darker than the rest of the material, and a brown patch, evidently a faint staining, on the mane.

## 779 SEVENTEENTH CENTURY INLAID BOTTLE INDIA

Dimensions:  $5.72 \times 3.0$  inches.  $14.5 \times 7.6$  centimetres. Weight: 8.722 ounces. 247.270 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Dark sage-green

A bottle of curiously irregular form, inlaid with delicate floral designs in silver, and set with a ring of leaves of fluted white nephrite mounted in gold. The spreading foot, with circular striated rim, is fashioned in the shape of a flower with four fluted petals recurved at the tips. The body, of bulging globular form below, is ornamented above with several encircling rings of silver lines, succeeded by a band of ten leaves composed of striated plaques of white nephrite inlaid in gold all round the shoulder. This is drawn in above a ring which constricts the base of the neck. From this point the neck, slightly expanded below, springs outward at an obtuse angle, curving upward again toward the mouth, which has a circular sloping rim defined by two circles of silver. The surface of the body is covered with four feathery sprays of flowers with gracefully spreading stems covered with small leaves and tiny blossoms. The upper part is

fringed with a ring of little hanging single leaves. The neck is surrounded by a series of upright leafy sprays of the same delicate design. The nondescript form of this vase must have been modelled after one of the many varieties of the bottle- or calabash-gourd (*Lagenaria vulgaris*). In shape it exactly represents a gourd artificially constricted, as is not unusual, at the neck and sliced off near the stalk. The bottle was intended, no doubt, to hold rose-water, and would have been mounted with a constricted nozzle of silver as a "perfume-sprinkler." A bottle of white jade of somewhat similar form, but thinner, inlaid with jewels, from the collection of the Due de Morny, is illustrated in an article by Jacquemart in the "Gazette des Beaux Arts," 1864, XVI, p. 34.

The material is translucent, homogeneous and compact, but more or less veined and marked.

## 780 JEHANGHIR (1605-1627) OR EARLY SHAH JEHAN DISH INDIA

Dimensions:  $2.22 \times 9.66$  inches.  $5.6 \times 24.5$  centimetres. Weight: 1 pound 10.714 ounces. 757.350 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Dark seaweed-green shading into darker green

A deep dish of rounded form, with a prominent rim encircling the foot, and projecting outward at the base. The interior is decorated with an engraved design of formal pattern inlaid with silver. A chrysanthemum flower of conventional form occupies the centre, inside a band of three rings, which is surrounded by a series of ten concentric rings of serrated pattern, the teeth increasing in size proportionately up to the edge so as to fill the interior of the dish with a geometric pattern. The outer surface is carved in slight relief with a circle of narrow panels or flutings separated by vertical ridges, with bands of foliated ornament above and below. The base is

carved below with a full-blossomed flower of conventional outline, with a circle of four broad striated petals surrounding a centre carved with cross lines. A rare color in Indian jade, but the peculiar style of ornamentation is most characteristic.

The material is translucent, homogeneous and compact, and is traversed by numerous sinewy veins. When a strong light is allowed to pass through it the presence of numerous large patches of a black metallic substance, apparently chromite, may be noted. In the thinner parts the color is much paler.

## 781 EIGHTEENTH CENTURY JEWELLED BUTTERFLY INDIA

Dimensions of wings:  $1.62 \times 1.19$  inches.  $4.1 \times 3.0$  centimetres. Total weight: .613 ounce. 17.390 grammes  
 Hardness: 7.0. *Jadeite*  
 Color: Emerald-green

A butterfly perched upon a leaf, designed as a pendant with a loop upon the point of the leaf beneath for suspension, subsequently

mounted in European fashion with a pin for a brooch. The leaf is executed in delicate filigree gold-work of Indian workmanship, as



are the frame and front wings of the butterfly. Its body is composed of pearls of appropriate form, one for the abdomen, another of lobulated shape for the thorax, and two round pearls for the prominent eyes. The hinder pair of wings are inlaid with thin plates of emerald-green jadeite carved in natural outline and etched over the surface to imitate the natural markings. The pearl in the thorax is

remarkable in being a "grouped" pearl—that is, one made up of seven coalescing pearls.

The material is translucent (almost transparent), very homogeneous and compact, and admits of a high polish. By transmitted light the jadeite crystals are apparent.

## 782 EIGHTEENTH CENTURY

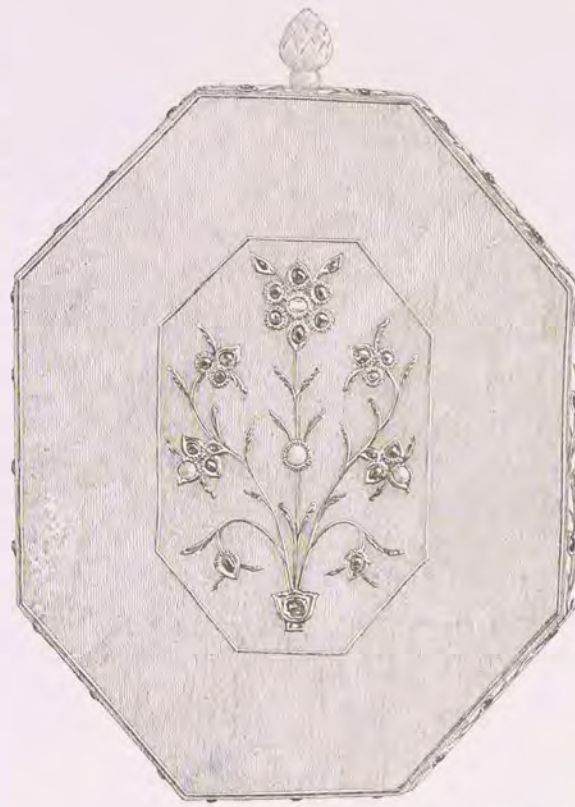
## JEWELLED MIRROR

INDIA

Dimensions:  $6.91 \times 4.81 \times .34$  inches.  $17.5 \times 12.2 \times .9$  centimetres. Weight: 12.396 ounces. 351.455 grammes  
Hardness: 6.5. *Nephrite*  
Color: Very light gray with very faint yellowish tint

A flat slab, of octagonal shape, carved into a frame for a mirror, with a chrysanthemum bud projecting in upright fashion at the top. The obverse side is excavated to hold the glass, a narrow projecting rim being left all round which is inlaid with a line of gold. The external border is encircled with an undulating floral spray, with the stem and leaves worked in gold and the buds set alternately with thirteen rubies and twelve emeralds. The reverse side is also encircled with a gold line, and this is repeated inside to define an octagonal panel in the middle which is filled with a graceful floral design executed in the conventional Indian style. It represents a branching plant springing from a jewelled (sapphire and diamond) flower-pot and bearing leaves of diverse shape and color formally arranged into an ornamental pattern. The flowers are jewelled with six emeralds, sixteen rubies, and two turquoises, a round pearl in the centre and a large diamond in the heart of the blossom at the top completing the tale of stones.

The material is so translucent that a printed piece of paper pasted over the quicksilver of the mirror behind it can almost be read through it.



## 783 EIGHTEENTH CENTURY

## JEWELLED ARMLET

INDIA

Dimensions:  $3.47 \times .47$  inches.  $8.8 \times 1.2$  centimetres.  
Weight: 2.957 ounces. 83.850 grammes  
Hardness: 6.5. *Nephrite*  
Color: Light gray



A bracelet carved as a bangle, decorated with inlaid gold and set with precious stones. The decoration is arranged in three encircling bands defined by lines of gold. The central band contains a floral scroll with the undulating stem and leaves worked in gold, represented by a variety of jewels, eighteen in all, including two rubies, two sapphires, two emeralds, two cat's-eyes, two corals, two zircons, two turquoises, a moonstone, a pearl, a topaz, and a diamond cut in facets. The two bands on each side of this central band are filled with a geometric pattern of saw-tooth design in gold.

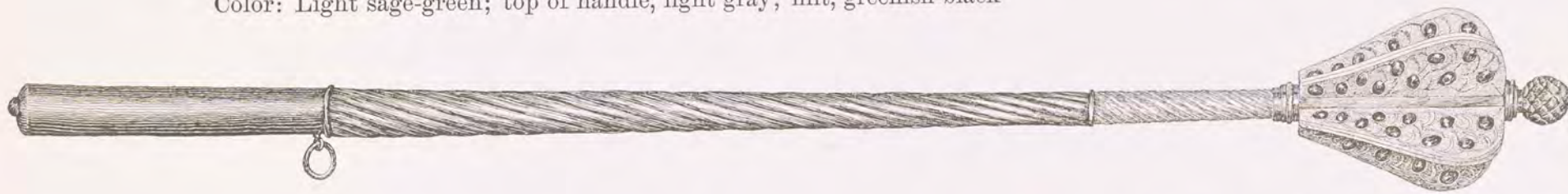
A very beautiful piece of homogeneous and compact jade, which presents a somewhat murky appearance when a strong light is allowed to pass through it, and seems to be almost subtranslucent.

## 784 EIGHTEENTH CENTURY

## JEWELLED SCEPTRE

INDIA

Dimensions:  $24.22 \times 2.72$  inches.  $61.5 \times 6.9$  centimetres. Weight: 13.902 ounces. 394.132 grammes  
Hardness: 6.5. *Nephrite*  
Color: Light sage-green; top of handle, light gray; hilt, greenish-black



A sceptre fashioned somewhat in the shape of a mace. The silver-gilt handle is moulded with spirally curved bands in the pattern of a cable. It is riveted below to a cylindrical hilt of mottled dark-green

nephrite shading into black, which is carved with a small knob at the end and is about five inches long. The top of the handle is of light-gray nephrite carved with similar projecting spirals of cable pattern,



and is about three inches long. Upon this is mounted the head of the sceptre, which has a pierced fir-cone at the summit, and at the sides, inserted all round its central rod, five radiating upright wing-like blades made of plaques of translucent light sage-green, homogeneous and compact nephrite. These are of curved outline inside, and are broader above than below so as to make the head of the sceptre pyriform. The edges are defined by lines of gold, and the blades

are etched on both faces with floral scrolls inlaid with gold and set with one hundred large uncut garnets, ten in each face, to represent the flowers.

The upper part of the handle is translucent, but contains numerous slightly opaque inclusions and fractures. The hilt is subtranslucent, almost opaque, and contains numerous inclusions and markings.

## 785 EIGHTEENTH CENTURY DAGGER-HANDLE INLAID WITH SILVER

INDIA

Dimensions:  $5.31 \times 2.62 \times .78$  inches.  $13.5 \times 6.6 \times 2.0$  centimetres. Weight: 10.462 ounces. 296.620 grammes  
Hardness: 6.5. *Nephrite*  
Color: Dark sage-green

A dagger-handle of the usual form, with a broad base indented in the middle and terminating in spirals at the two ends, the other extremity curved to a rounded flattened projection. It is ornamented with a profusion of foliated designs, delicately outlined and waving in gracefully undulating sprays so as to cover the surface with a charming conventional decoration, which is inlaid with silver, an artistic contrast to the dark background. The front and back, together with the convexity at the end, are each decorated with a large foliation, two stretching upward, the third pointing downward between the other two. The mid-ribs and margin of these foliations are set with long rows of delicate leaves, the upper foliations having a fifth row added down the middle. The intervals between these formal foliations are covered with flowers and small leaves springing from undulating stems which wind freely throughout as well as to and fro over the large foliations upon the front and back.



## 786 EIGHTEENTH CENTURY INLAID BOX AND COVER

INDIA

Dimensions:  $1.16 \times 3.72 \times 2.56$  inches.  $2.9 \times 9.4 \times 6.5$  centimetres. Weight: 3.933 ounces. 111.520 grammes  
Hardness: 6.5. *Nephrite*  
Color: Seaweed-green

A flat-bottomed box, shaped like a diamond, with the lateral angles rounded and the four sides deeply indented in the middle. It is partitioned inside so as to have two circular compartments at the sides and a foliated compartment at each end. The surfaces of both the box and the cover are etched with a design of Chinese character inlaid with hammered gold. The rims are defined by plain gold lines enclosing a band round the box and framing the convex field of the cover. These are both etched with the conventional outlines of a wooded landscape in which the foliage



is indicated by a group of dots, the undergrowth by more or less parallel upright lines. A small garnet, cut *en cabochon*, is set in the central ornamentation of the cover.

When examined under a strong light the material is seen to consist of a rich green nephrite through which there are markings of a black metallic substance, apparently chromite. Through the centre of the lid there is a large vein which is much darker than the rest of the piece, due to infiltrations in the weathered boulder out of which both box and cover were made.

## 787 EIGHTEENTH CENTURY DAGGER

INDIA

Dimensions of handle:  $5.25 \times 2.62 \times 1.0$  inches.  $13.3 \times 6.6 \times 2.5$  centimetres. Weight: not given  
Hardness: 6.5. *Nephrite*  
Color: Very dark green, almost black

A dagger, the handle of which is of the usual form, with a broad base indented in the middle and terminating in spirals at the two ends, the other extremity curved to a rounded flattened projection. It is ornamented with a profusion of floral designs delicately outlined and waving in gracefully undulating sprays so as to cover the sur-

face with a charming conventional decoration, which is inlaid with silver.

The blade, which is ten inches long, curves upward to a sharp point. A ridge in the middle of each side extends to the point and springs from a panel at the hilt entirely filled with a flowering plant.



788

NINETEENTH CENTURY

## JEWELLED PENDANT

INDIA

Dimensions:  $2.09 \times 1.38 \times .16$  inches.  $5.3 \times 3.5 \times .4$  centimetres. Weight: 1.028 ounces. 29.150 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint grayish tint

A flat oval pendant with a projection at the top pierced for suspension, decorated on the front with floral designs worked in gold and set with jewels. Gold lines define an oval panel in the centre, with a broad band encircling it like a frame. Both the panel and the frame are filled with formal sprays of flowers, with the stems and

leaves fashioned in gold and the flowers indicated by precious stones of diverse color, eighteen in all, including twelve diamonds, a pearl, an emerald, a sapphire, a ruby, a zircon, and a coral. Suspended with a necklet of woven gold threads.

The material is very pure in texture.

789

NINETEENTH CENTURY

## JEWELLED PENDANT

INDIA

Dimensions:  $3.06 \times 2.38 \times .34$  inches.  $7.8 \times 6.0 \times .9$  centimetres. Weight: 1.937 ounces. 54.935 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint grayish tint

An oval pendant, carved with a raised oval panel in the middle and with a small projection on the upper rim pierced for suspension. The oval panel in relief is defined by a line of gold and is filled with flowering branches spreading in a regular formal design of conventional Indian style. The branching stem and leaves are inlaid with gold, the flowers of different shapes outlined in gold and set with precious stones of many colors. A dish, composed of two plaques of emeralds, stands suspended in the middle, and a pair of birds with jewelled bodies are perched on the branches *affronté* on either side, as



if feeding from the dish. The frame round the circumference, also defined by gold lines, is filled with wreaths which start from below, where the stems interlace, and pass up on either side, set with carved emeralds, to terminate in a cut diamond set in a gold outline, designed to represent some fruit, apparently a pomegranate. Perched on the summits of the wreaths are two birds with emerald bodies in the act of feeding on the fruit. The jewels number forty-two in all, and include twenty emeralds, seventeen rubies, two pearls, a coral, and two Indian brilliant-cut diamonds.

790

NINETEENTH CENTURY

## JEWELLED PENDANT

INDIA

Dimensions:  $2.53 \times 1.62 \times .19$  inches.  $6.4 \times 4.1 \times .5$  centimetres. Weight: 1.085 ounces. 30.766 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint grayish tint

A flat oval pendant, cut in the outline of a pomegranate with the calyx projecting below and the stalk above perforated for suspension. Decorated on the outer face with floral designs worked in gold, and set with jewels. There is an oval panel in the middle and a broad encircling band round the rim defined by lines of gold. The panel is filled with a conventional floral pattern containing flowers of differ-

ent shapes set with variously colored precious stones, with a bird in the centre having its body and tail carved of emeralds, and having a ruby poll. The oval frame is filled with an undulating floral scroll set with pearls and with jewels cut in facets. The jewels include ten emeralds, eighteen rubies, eleven diamonds, seven pearls, one coral, one sapphire, and two zircons.

791

NINETEENTH CENTURY

## JEWELLED THUMB-RING

INDIA

Dimensions:  $1.38 \times 1.09$  inches.  $3.5 \times 2.8$  centimetres. Weight: 2.297 ounces. 65.125 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint bluish tint



A thumb-ring, similar in shape to a Chinese archer's thumb-ring, carved out of white jade and decorated with floral designs inlaid with gold and set with sixty precious stones, viz.: twenty-four rubies, thirty-two emeralds, and four diamonds. The floral designs are arranged in two encircling bands defined by lines of gold, a broad band on the extreme surface, a narrow band surrounding the upper convex rim. The broad band is bordered above and below with an undulating scroll of gold supporting a ring of rubies and emeralds cut *en cabochon*, arranged alternately and outlined in gold to represent flowers; the field is occu-

pied by four formal upright sprays, each composed of three flowers, the upper one of which is a cut diamond, the lateral pair cut emeralds. The narrow band upon the upper rim is an undulating floral scroll, with the stem and leaves worked in gold, the flowers set alternately with emeralds and rubies.

The material is translucent, homogeneous and compact, and shows a vein-marking on one side when a strong light is allowed to pass through it. It is very white, and is well adapted in this respect for showing off to great advantage the gems and the fine gold setting which contains them.



## 792 NINETEENTH CENTURY

## JEWELLED THUMB-RING

INDIA

Dimensions:  $1.47 \times 1.16$  inches.  $3.7 \times 2.9$  centimetres. Weight: 2.614 ounces. 74.120 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint bluish tint

A thumb-ring similar in shape to that described under No. 791, and differing from it only in minor details of decoration and in being slightly smaller. The total number of gems is the same in each, but there is an extra ruby in this and one emerald less. In the upright

floral sprays outside the flowers at the top are of different shape, and the diamonds set in them are placed laterally instead of vertically.

The material is identical in both, except that the vein-marking is absent from No. 792.

## 793 NINETEENTH CENTURY

## JEWELLED CLASP

INDIA

Dimensions:  $3.16 \times 1.53 \times .66$  inches.  $8.0 \times 3.0 \times 1.7$  centimetres. Weight: 1.774 ounces. 50.288 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint grayish tint

A girdle-clasp of material similar to No. 794, and somewhat similarly decorated, but smaller in size and decorated with floral designs in inlaid gold set with fifty-five jewels. The stud is carved in the shape of a phenix's head with ruby eyes and emerald crest. This, as well as the perforations on the corresponding half, is flanked by jewelled sprigs of flowers. The convex surfaces of the two parts of the clasp are filled with floral sprays. They are square in shape, defined outside by lines of gold, with square panels of foliated outline in the middle, which have an emerald in the centre of each, from which

radiate pairs of upright leaves flanking four flowers set with diamonds, one of which points to each corner. The frames of these panels are filled with formal sprays set with alternate emeralds and rubies. The dragon-headed clasp is of the style of those belonging to a Mogul prince; the other one, of smaller size and more graceful outline, with the stud designed as the head of a phenix, would be appropriate for a princess.

The material is seen to be quite free from imperfections when a strong light is allowed to pass through it.

## 794 NINETEENTH CENTURY

## JEWELLED CLASP

INDIA

Dimensions:  $3.66 \times 1.53 \times .94$  inches.  $9.3 \times 3.9 \times 2.4$  centimetres. Weight: 3.228 ounces. 91.539 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very light sage-green tint



which stands out from the other, fashioned in the shape of an animal's head. The under surfaces, which are concave, have vertical ridges hollowed out longitudinally for the band of the girdle. The eyes of the dragon-like head are jewelled with very minute lenticular eye-agates, and the forehead set with a rose-cut diamond. Both

of the obverse convex panels, outlined in gold at either side, are decorated in the middle with chrysanthemum flowers each composed of a rose-cut diamond within a ring of eight pearls, from which spring leafy sprays on all sides outlined in gold, with eight buds, composed alternately of rubies and emeralds, formally arranged so as to surround the central blossom. A similar floral spray, containing two rubies and two emeralds, winds round the border of the perforation in the tongue so as to encircle the head of the animal when the clasp is fastened.

The material is free from all inclusions except a slight clouding.

## 795 NINETEENTH CENTURY

## JEWELLED VASE

INDIA

Dimensions:  $4.16 \times 1.84 \times 1.06$  inches.  $10.6 \times 4.7 \times 2.7$  centimetres.  
 Weight: 6.337 ounces. 179.670 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: White with very faint bluish tint

A little vase modelled in the form of a flattened double-gourd, decorated in gold with floral and foliated designs jewelled with sixty-three rubies and one emerald. The foot is an oval projecting rim. The cover, hollowed inside at the base so as to fit tightly upon the bevelled edge of the mouth, is crowned by a large knob fashioned in the shape of a lotus-fruit, with the seeds showing at the top as rubies encircled by a ring of eight petals outlined in fine gold and jewelled in the middle with an emerald. Below this a ring of jewels and a double gold line define the border. The vase is similarly decorated in panels bordered by lines of gold filled with sprays of lotus, the flowers and buds of which are composed of shaped plaques of ruby, the leaves outlined in gold. The oval panels on the obverse and reverse, containing identical designs of formally branching flowers, are separated by lines of stiff upright floral sprays placed vertically on the sides of the vase. The upper half of the gourd is surrounded by a circle of eight panels with spreading foliations outlined in gold extending downward so as to cover its surface. Each foliation contains a hanging sprig of lotus with a ruby flower in the middle and a ruby bud suspended at the tip.

The material is subtranslucent, homogeneous and compact, with very little veining or marking.





796

IMPERIAL GIRDLE (*Huang Ch'ao Tai*)

MING DYNASTY (1368-1644) (?)

ANNAM

Length: 42.0 inches. 106.6 centimetres. Total weight: 1 pound(?) 12.215 ounces. 799.890 grammes  
 Dimensions of the eighteen medallions—Four: .88 × .75 inch. 2.2 × 1.9 centimetres. Six: 1.5 × .88 inches. 3.8 × 2.2 centimetres.  
 Six: 2.0 × .88 inches. 5.1 × 2.2 centimetres. Two: 2.62 × .88 inches. 6.6 × 2.2 centimetres  
 Hardness: 7.0. *Jadeite*  
 Color: Brilliant pea-green

A belt of ribbed cloth-of-gold with a floral brocade pattern, studded with eighteen openwork medallions of jadeite, of varying size and shape, set in gold frames and sewn upon the belt. The gold frames are bands overlaid with a delicate appliqué design of floral scrolls interrupted by symbols of longevity, of artistic and literary skill. The free projecting rims are set with pearls attached by gold wire. The medallions are of choice color, and are deeply carved in openwork and undercut with diverse designs of imperial dragons surrounded by clouds. Some are represented full-face, others as if coiling round toward the front. The style, though very like that of the Ming dynasty of China (1368-1644), betrays in its details Cochinese influence. Girdles of this kind, set with plaques of jade,

long formed part of the court dress of China, until the Manchu conquest in 1644, when the fashion was changed. It is retained to the present day, however, in Korea as well as in Cochin-China, the costume of both of these countries having been originally modelled after that of their ancient suzerain.

This girdle, together with the screen No. 797 and the ink-pallet and water-horn No. 798, is said to have been carried to Paris from Annam shortly after the occupation by the French forces of Hué, the capital, in the year 1887; and they are supposed to have been stolen from the palace during that time, though looting was forbidden. The belt is supposed to have been worn by Nur-ed-din, the Emperor of Annam.

797

1802-1819

SCREEN (*Ch'a P'ing*)

ANNAM

Dimensions: 12.5 × 9.5 × .31 inches. 31.7 × 24.6 × .8 centimetres. Weight: not given  
 Hardness: 7.0. *Jadeite*  
 Color: Pale green mottled with clouds of varied tint passing from gray to grayish-green suffused in parts with a purplish tint

A flat oblong plaque, of unusually large size, carved into rectangular shape, smoothly polished on both sides, and elaborately mounted as a screen. The panel itself is engraved on one side with a picture finely executed in Chinese style, the etched lines of which are filled in with gold so that it stands out visibly from the greenish background. The picture represents a Taoist temple, with an imperial summer palace attached to it, situated in the midst of a picturesque mountain scene. The hills are covered with flowering shrubs and different kinds of trees, distinguished in the Chinese manner by conventional touches in the foliage, including poplars and willows, dryandra and *Salisburia* trees, as well as pines and chestnuts. A shallow lake planted with rice occupies the front enclosure of the temple grounds, the water from which passes under the main gateway in a small rivulet which flows down in the foreground of the picture on the right, where it is bridged by a stone slab. The temple is seen at the top of the picture, a large two-storied building with pillars, encircled by a covered veranda, built upon a raised platform with a flight of stone steps leading up to the double folding doors. This would contain images of the Taoist deities and be the principal hall of worship. It faces a square courtyard which has a balustrade in front and long cloisters for the monks on either side. The other buildings upon the right outside the courtyard are the kitchen, refectory, and other offices of the monastery. Upon the left stands an isolated pavilion mounted upon a separate peak, which is doubtless the hall where visitors are served with tea while they tarry to admire the surrounding scenery. A flight of steps cut in the side of the hill leads down from this to a cluster of houses below, containing the guest-chambers which are provided in every monastery. The middle of the picture is filled with another cluster of buildings, the style and arrangement of which show that they are intended for the reception of an emperor and his suite. These are approached by a broad path which leads from the main gate, fringing the right bank of the lake, to an inner gateway. This would be occupied by the imperial guards and leads into the summer palace, which is often in this way attached to a temple in the far East. Within this gate is a large square pillared pavilion, open in front, built on the lines of an imperial dining-hall. Higher up a tiled portico, raised upon four pillars, leads to the inner courtyard, occupied by a large five-chambered building for the officers and chamberlain of the court; above which

towers the broad roof of another taller building, the sacred abode of the emperor himself.

The mounting is very elaborate. The panel is set in a gilt border ornamented with one hundred large stones (garnets, rubies, crystals, etc.) cut *en cabochon*. This is succeeded by a broader frame bounded inside and out by raised gilt rims of rectangular fret design, including a band of translucent emerald-colored enamel over a painted ground of curvilinear scroll pattern. This band is decorated with a ring of archaic Chinese characters carved out of white jade, in which the words *fu* (happiness) and *shou* (longevity) are repeated in pairs thirty-four times. Surmounting the frame is a canopy with a pair of imperial dragons in clouds in active pursuit of a magic jewel which is shown in red between them. The other side of the frame differs from that just described in having the enamel band filled with beautifully carved sprays of flowers, and has the eight Taoist symbols in the corners, bound together in pairs by fillets. The floral sprays are also eight in number: at the top, a branch of plum blossom with flowers of red rubellite, and a branch of yulan magnolia with flowers of white jade, both leafless, as the flowers open before the leaves expand; at the bottom, a spray of the herbaceous peony (*Paeonia alba*) with flowers of pink quartz and leaves of jade, and a spray of chrysanthemum with red tourmaline and yellow beryl, a bud of yellow enamel, and jadeite leaves; while at the sides are inserted sprays of the tree-peony (*Paeonia moutan*) and a begonia on the left, roses and lotus on the right—the flowers carved out of colored varieties of pink tourmaline, yellow beryl, and colorless rock-crystal, the leaves of jadeite. The Taoist symbols in the corners comprise the double-gourd with the bamboo drum, and the castanets with the lotus flower, at the top; the sword with the palm-leaf fan, and the flute with the flower-basket, at the bottom. All are fashioned out of nephrite, jadeite, tourmaline, chalcedony, yellow beryl, and garnet, and are bound round with gilt fillets filled in with blue from the kingfisher's feathers.

The outside rim of the frame is delicately engraved all round with a continuous floral scroll of peonies. The canopy which surmounts it and extends down some way on either side is overlaid with a thin plate of bronze moulded in openwork design so as to show through the interstices the blue and red enamel behind. The sapphire-blue represents the sky seen through the clouds amidst which the five-







clawed dragons are coiling. The jewel in the centre is filled in with red and is encircled with the usual flaming rays of effulgence. The inner border is decorated with a pierced band of cross-lined pattern enclosing formal flowers with red-enamel background.

Two vases of graceful form, standing on pedestals supported by clouds, and containing sprays of peony flowers and ju-i sceptres tipped with red stones and inlaid with jade, buttress the frame on each side; the whole resting on the backs of two elephants in a peculiar crouching attitude which are mounted in gilt bronze. They have jewelled trappings, and are holding in their uplifted trunks branches of the so-called Indian lotus (*Hai Fan lien*) of Taoist mythology, with capsules made of white jade, the branches trailing back over their bodies. Their trunks are of ivory. Each saddle, inlaid with jade in front, has upon its top a large lotus thalamus carved out of white jade, upon which the lower corners of the screen rest. The harness is

ornamented with discs of colored stones, including rubies, sapphires, emerald-green jadeite, rubellite, moonstone, garnets, and rose-crystal; the saddle-cloths, of gilt brocaded pattern touched with kingfisher's plumes, are set with large floral studs of dark-green jade and encircled with garnets. The necks of the elephants are hung with collars with bells of sardonyx suspended from them.

The artistic details betray the hand of a Cochin-Chinese artist, and the period is to be referred probably to the reign of the Emperor Gya-lung, who reigned over Tongking, Cochin-China, and part of Kambodia from 1802, when he returned from his long exile in France, till his death in 1819. The screen, which is remarkable for the large size of the slab of jadeite as well as for the sumptuous but barbaric richness of the mounting, was brought from Cochin-China with the jade-ornamented belt No. 796 and the ink-pallet and water-horn No. 798.

798 1802-1819

## INK-PALLET AND WATER-HORN

ANNAM

Dimensions of pallet: 4.16 × 3.06 × .59 inches. 10.6 × 7.8 × 1.5 centimetres. Weight: 9.608 ounces. 272.376 grammes  
Specific gravity: 2.9363; hardness: 6.5. *Nephrite*  
Color: Light gray faintly tinged with sage-green



An ink-pallet and water-horn which, with the girdle No. 796 and the screen No. 797, formerly belonged to the imperial palace at Hué, Annam.

The ink-pallet is of flattened oblong shape with rounded edges and undulating outline so as to fit the hand and afford a natural hold for the fingers when held in the palm, as it was evidently intended to be. The upper third is deeply hollowed out to hold a small supply of water, the little pit being left traversed by rolling scrolls of clouds enveloping the sun's disc, rising from a floor of sea-waves with curling crests. This affords a roughened surface for wiping the brush. The remaining two thirds form the pallet for rubbing the cake of ink upon. It is gently sloped toward the middle, and a slight rim is left all round which is broadest at the base, where it is carved with

mountains in slight relief with a rift in which the disc of the moon is visible. The reverse, which is flat, is carved with irregular scrolls of clouds shaping themselves into felicitous forms of ju-i sceptres and waving fillets.

The pallet is enclosed in a box of hammered gold, chased and ornamented with a repoussé floral design which extends upward round the sides of the cover. The design is that of a melon plant, the vine stretching all round the box with its sprays of leaves and tendrils executed in naturalistic relief, the twin fruit embossed on one side, a full-blown blossom on the other. A butterfly with curled antennae and wide-spreading wings is embossed across the top so as to vary the monotony of the floral decoration. The panel which is left on the top of the cover is engraved with an inscription of four stanzas



of rhyming verse, composed in commemoration of the ink-pallet by the emperor, as the heading shows:

"MADE BY THE EMPEROR" (*Yu Chih*)

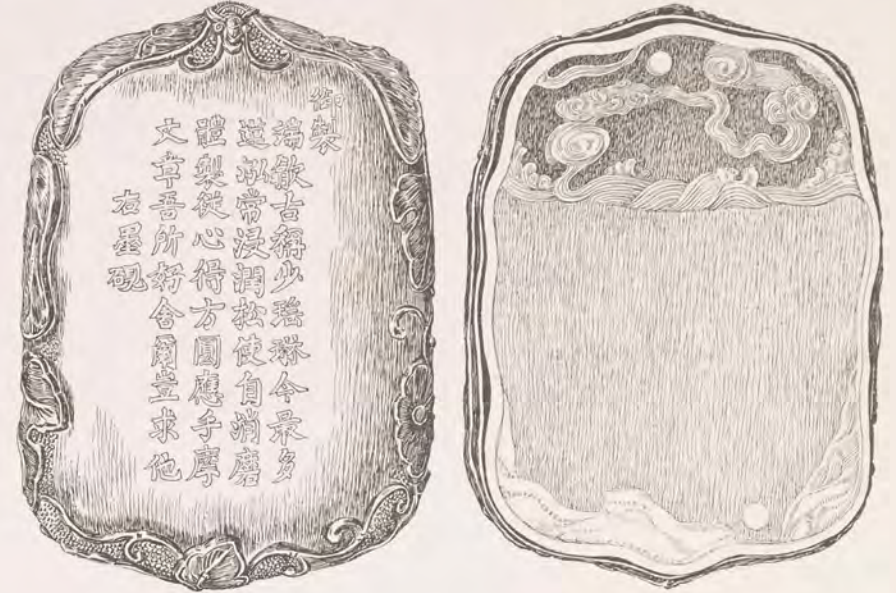
"The famous stones of Tuan and Shê<sup>1</sup> were even in ancient times reckoned rare;  
The precious jades of the classical books are in these days much less uncommon.  
May there always be dew upon the lotus leaf to moisten its surface,  
And the pine tree spontaneously afford a constant supply of ink!  
In material and form it is all that the heart could desire,  
The outline of the shape, as it were, moulded to the fingers by use.  
Skill in the art of literature is what I am specially devoted to;  
In a humble abode like mine what else could I want?"

"Upon the accompanying ink-pallet."

The box is engraved underneath in characters of dotted outline with the following inscription: "85 gold weighing 6 *liang*, 2 *ch'ien*, 3 *fên*," (the figure 2 has been altered from 6 on account, doubtless, of loss of weight by wear). The weight-characters are in cursive script of Annamese style. It would be  $6\frac{23}{100}$  *liang*—the *liang* being equivalent to about  $1\frac{1}{3}$  ounces. The 85 refers probably to the alloy, meaning  $\frac{85}{100}$  of pure gold.

The horn, which is mounted in gold for suspension from the girdle, was intended to carry a supply of water for use in rubbing down ink on the pallet. It is engraved in large gilded characters, *Pan Lung Chüeh*—"Variegated Dragon's Horn," the first character referring apparently to its curiously mottled surface, covered as it is with white spots upon a brownish-yellow ground. The horn is mounted with its concavity upward, and pierced about the middle with an oblong aperture which is covered by a projecting nozzle. This nozzle is protected by a bell-shaped cover of gold embossed with the swastika

symbol on each side and the *shou* character on the two faces, meaning, *Wan shou*, "A myriad of ages," or "May your Majesty live forever!" This cover is linked by chains to the mount of the horn, which is in the form of a dragon bestriding and enveloping the horn



with its scaly body. In the usual conventional form of the imperial five-clawed dragon, the gaping head protrudes beyond the base of the horn, a row of dorsal spines proceeds all down the concavity, and its tail projects beyond the top. It grasps the horn with its claws in two circlets completed by cloud-scrolls. No inscription is visible to the naked eye, but with a magnifying lens a line of tiny characters lightly dotted on the lowest scale of the dragon's neck may be discovered. It reads "85 brown gold weighing 3 *liang*, 6 *ch'ien*, 1 *fên*." The third character is very indistinct, but looks like *tsü* (brown), and the alloy is really browner than usual. The script is in the Annamese style. The horn seems to be some kind of natural tusk.

799

1897

## STATUETTE OF VENUS DE MILO

FRANCE



Dimensions: 3.53 × 1.19 × 1.09 inches. 9.0 × 3.0 × 2.8 centimetres.

Weight: 2.522 ounces. 72.500 grammes

Specific gravity: 3.3325; hardness: 7.0. *Jadeite*

Color: Lavender with some whitish spots

A statuette representing the famous statue of Venus found at Melos (or Milo), Greece, in 1820, and supposed to date from the fourth century B.C. It is a beautiful specimen of modern lapidary

work in this material, executed in Paris in 1897 by artists in the establishment of A. Berquin-Varangoz. It was made from a block of so-called Tibetan jadeite.

800

1898

## PORTRAIT OF MR. BISHOP

FRANCE

Dimensions: 10.0 × 8.0 inches. 25.4 × 20.3 centimetres.

Specific gravity: 3.0112; hardness: 6.5. *Nephrite*

Color: Pear-leaf-green

A profile portrait of Mr. Heber Reginald Bishop, executed in relief upon a fine piece of New Zealand nephrite, by artists in the establishment of A. Berquin-Varangoz of Paris, during the years 1897 and 1898.

The material is very homogeneous, containing in part large irregu-

lar markings of paler and darker inclusions, the paler being of the same material, the darker due to oxidation of some of the iron. The dark-brown spots on the lower end are probably due to the hydrous oxide of iron—limonite.

<sup>1</sup> These are the places which produce the pallets of fine-grained slate so highly valued throughout China.



801 1898

## ROUND BONBONNIÈRE

FRANCE

Dimensions: 2.25 × 1.38 inches. 5.7 × 3.5 centimetres.  
 Weight: 3.223 ounces. 91.358 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Dark pear-leaf-green

A round five-lobed bonbonnière, with lid mounted in gold and connected with a golden hinge. The decoration consists of finely carved leaves which separate the lobes, executed in Louis XV style by artists in the establishment of A. Berquin-Varangoz, the noted lapidary of Paris.

The material, which is New Zealand nephrite, is beautifully translucent and has taken a fine polish.



802 1890

## PAPER-KNIFE

FRANCE

Dimensions: 13.44 × 2.16 × 1.28 inches. 34.1 × 5.5 × 3.2 centimetres. Weight: 9.847 ounces. 279.176 grammes  
 Specific gravity: 3.0096; hardness: 6.5. *Nephrite*  
 Color: Brilliant seaweed-green

A paper-knife, the blade of which is in the form of a Turkish scimitar, and the handle that of a pedestal with a beautifully carved female head, a facsimile of one found in a lovely *al fresco* picture by Watteau. It was cut by M. Bozzachi, employed by A. Berquin-Varangoz, the well-known lapidary of Paris, from a large block of nephrite sent from New Zealand to England for the Colonial Exhi-

of the block of jade took it to Paris, where by the use of hydraulic machinery and the diamond it was cut into many pieces, one of which was selected for this knife. It is claimed that M. Bozzachi was occupied working one hundred and thirty days in the production of this piece. It is the finest specimen of modern work in jade the writer has seen.



bition of 1886. The surface of the boulder, which was about two and one half feet thick and three feet high, had been worn smooth by the constant action of water, having been taken from one of the lakes of Te Wahi Pounamu, the Middle Island of New Zealand and its chief jade-producing district. After the exhibition the purchaser

The material is translucent, homogeneous and compact, with a small number of the tiny black inclusions that are characteristic of nephrite and are probably black chromite. By the Maoris this beautiful variety is called *pounamu-rau-puka-puka*, "the greenstone of the puka-puka leaf."

803 1897

## SCENT-BOTTLE

FRANCE

Dimensions: 2.5 × .56 inches. 6.3 × 1.4 centimetres. Weight: .558 ounce. 15.804 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A small scent-bottle with a hinged cover, mounted in gold. It was made in Paris, in 1897, of New Zealand nephrite, and is in this Collection as a specimen of modern European lapidary work. Its form is that of the "bitter gourd"—the *k'u kua* of the Chinese and the *Momordica Charantia* of botanists.

The material is translucent, homogeneous and compact, and is remarkably free from all kinds of inclusions.

804 1897

## ARMLET

FRANCE

Dimensions: 3.12 × .41 inches. 7.9 × 1.0 centimetres. Weight: 1.835 ounces. 52.025 grammes  
 Specific gravity: 3.0112; hardness: 6.5. *Nephrite*  
 Color: Dark pear-leaf-green

A very finely polished armlet made in Paris, in 1897, of New Zealand nephrite. The material, which is translucent, homogeneous and compact, shows a dark transverse veining.



805 1898 RECTANGULAR BAR FRANCE

Dimensions:  $12.5 \times .5 \times .5$  inches.  $31.7 \times 1.3 \times 1.3$  centimetres. Weight: 5.008 ounces. 141.978 grammes  
Specific gravity: 3.0108; hardness: 6.5. *Nephrite*  
Color: Pear-leaf-green

A finely polished rectangular bar or ruler, cut in Paris, by artists in the establishment of A. Berquin-Varangoz, from a beautifully translucent piece of New Zealand nephrite.  
The material is homogeneous and compact, and on the polished surface has a lustre which almost suggests that the specimen has been oiled. By transmitted light the color appears to be a pale green with reflections of horn.

806 1883 SHALLOW BOWL RUSSIA

Dimensions:  $1.34 \times 4.81$  inches.  $3.4 \times 12.2$  centimetres. Weight: 5.425 ounces. 153.810 grammes  
Specific gravity: 3.0154; hardness: 6.5. *Nephrite*  
Color: Variegated pear-leaf-green with tiny specks of black

A shallow bowl, with flat base, made in the year 1883 in St. Petersburg, Russia, of Siberian nephrite. It is entirely undecorated, but the polish is unusually brilliant. It was made by steam-driven machinery, and is a fair example of modern Russian work.

The material is translucent, homogeneous and compact, with the characteristic brilliant black metallic spots, apparently chromic iron, and several veins of sinewy texture. The piece is remarkably sonorous.

807 1900 MINIATURE MAMMOTH RUSSIA

Dimensions:  $2.69 \times 1.88 \times 1.31$  inches.  $6.8 \times 4.8 \times 3.3$  centimetres. Weight: 3.733 ounces. 106.9566 grammes  
Specific gravity: 3.0080; hardness: 6.5. *Nephrite*  
Color: Dark green to lighter shades

A miniature of the hairy mammoth of Siberia, cut in St. Petersburg, in the year 1900, from a nephrite boulder from the Onot River, Siberia, and modelled after the celebrated mammoth in the St. Petersburg Museum and the best information obtainable from the collection in the Academy of Sciences there.

The material is a rich oily green, very homogeneous and compact, showing some darker veinings in a lighter field and the characteristic black metallic inclusions (very minute, however) which are apparently chromite. The tusks are much lighter in color than the trunk, and the trunk is somewhat lighter than the body, a circumstance due to the fact that these projections are thinner than the body.

The hairy mammoth (*Elephas primigenius*), a species of elephant frequently met with in palaeolithic times in nearly every portion of Europe and North America, lingered far down into post-glacial times before becoming extinct. It was nearly twice the weight of the modern elephant and was one third taller. Its tusks turned upward in a circle and were occasionally more than twelve feet long. It had a thick covering of long black hair, with a dense matting of reddish wool at the roots, the better to adapt it to the rigors of the glacial

period, during which it roamed in vast herds over the plains of southern England, northern France, the northern half of North America, and Siberia. Climatic and other changes, however, occurred, to which it succumbed; and its frozen carcass is still sometimes found in the frozen soil of Siberia and Alaska. So abundant were the tusks of this great animal that they long supplied all Russia with ivory, besides contributing no small amount for export to other countries. "In 1872 and 1873," says Prestwich in his "Geology" (Vol. II, p. 460), "as many as 2770 mammoth-tusks weighing from 140 to 160 pounds each were entered at the London docks." "And so perfectly," says the same writer, "have the carcasses of these extinct animals been preserved in the frozen soil of northern Siberia, that when, after the lapse of thousands of years, floods have washed them out of the frozen cliffs, dogs and wolves and bears have fed upon their flesh with avidity."

A skeleton, part of the skin, and some of the softer portions of the body of a mammoth were discovered in 1799 in a frozen cliff near the mouth of the Lena, and carried to St. Petersburg in 1806, where the skeleton was set up and is still preserved. This is the specimen on which the miniature now before us is modelled.

808 1899 PAPER-WEIGHT RUSSIA

Dimensions:  $3.25 \times 2.12$  inches.  $8.2 \times 5.4$  centimetres. Weight: 12.912 ounces. 366.150 grammes  
Specific gravity: 2.9751; hardness: 6.5. *Nephrite*  
Color: Spinach-green tinged with light gray and sprinkled with black spots

A paper-weight in the form of a Russian two-funt iron weight. It is shaped as a small globe from which a segment has been removed to form a base, and is provided with a loop-handle at the opposite side or top, the whole resembling a tea-kettle without a spout. It is the exact shape and size of the Russian two-funt weight, which equals one and eight tenths pounds avoirdupois, or one twentieth of a pud. It was made in St. Petersburg, in 1899, from Siberian nephrite, and bears that date.

The material is homogeneous and compact and shows a bedded structure parallel with the height of the piece. A pale grayish-green layer, much lighter in color than the surrounding mass, almost separates the object into two parts horizontally. The polish is high and the lustre oily. The black spots are due to inclusions of the black metallic substance, probably chromic iron, so characteristic of nephrite.



809 NINETEENTH CENTURY

EAR-DROP (*Kuru*)

NEW ZEALAND

Dimensions:  $2.44 \times .5 \times .19$  inches.  $6.2 \times 1.3 \times .5$  centimetres. Weight: .301 ounce. 8.540 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Light translucent green

An ear-drop of beautifully translucent and very compact New Zealand nephrite, free from flaws, but by transmitted light showing several inclusions. At the lower end there is a small elongated speck of a black mineral which is apparently chromic iron.  
 Such ear-ornaments were much prized by the Maoris.

810 NINETEENTH CENTURY

PENDANT

NEW ZEALAND

Dimensions:  $1.88 \times .5 \times .19$  inches.  $4.7 \times 1.3 \times .5$  centimetres. Weight: .201 ounce. 5.950 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Translucent green

An ear-drop or pendant of translucent New Zealand nephrite, mounted with gold and provided with a ring at the smaller end.  
 The material is translucent and pure.

811 NINETEENTH CENTURY

PENDANT

NEW ZEALAND

Dimensions:  $1.88 \times .44 \times .19$  inches.  $4.7 \times 1.1 \times .5$  centimetres. Weight: .168 ounce. 4.770 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Spinach-green

A small ear-drop or pendant of translucent nephrite, mounted with silver and provided with a ring at the smaller end for suspension.  
 By transmitted light the piece shows an apparent bedding across the narrow part.

812 NINETEENTH CENTURY

PENDANT

NEW ZEALAND

Dimensions:  $1.69 \times .66 \times .16$  inches.  $4.3 \times 1.7 \times .4$  centimetres. Weight: .302 ounce. 8.570 grammes  
 Hardness: 6.5. *Nephrite*  
 Color: Dark spinach-green

A flat claw-shaped ear-drop or pendant, mounted with finely chased gold at the upper end and provided with a ring for suspension. The material is very homogeneous and free from flaws.

Long ear-drops of this shape were called *kapehu* by the Maoris and were much prized by them, as were others, such as the *kuru*, *whakakai*, etc. They were handed down from generation to generation. Most of them have names, and there are songs



about them. Mr. Percy Smith of Wellington, New Zealand, informs us that an ear-drop named "Kaukau-Matua" was made out of a great block taken from New Zealand to Raratonga about the year 1300, and was lost only within the last few years while the owner was bathing at Taupo.

The highest term of endearment a lover can apply to his sweetheart is *Kuru-tonga-rewa*, "Superb Greenstone Ear-drop."







# INDEX







# INDEX

NOTE. The large figures and letters in the left-hand margin of the Catalogue correspond to the numbers of the specimens in the Collection

Aalst, J. A. Van, Chinese Music, 211 (*note*)  
 Academy of Sciences, St. Petersburg, 266  
 Aemite, percentage of, in jadeite specimen, 8  
 Actinolite, needles of colorless, 7  
   Nephrite section containing fairly numerous prisms of, 42  
   Dynamic metamorphosis in prisms of, 43  
 Adze, aboriginal nephrite, with slightly curving cutting edge, from British Columbia, 73  
   Nephrite, inserted in bone holder to which bone handle is lashed, 77  
   Large nephrite, with one flat and one bulging face and straight sides, 77  
   Aboriginal nephrite, from Alaska, 77  
   Nephrite, set in roughly shaped walrus-bone handle, 78  
   Small nephrite, almost flat on one face, slightly bulging on the other, 78  
   Well-formed nephrite, with wide straight cutting edge, 78  
   Small rough nephrite, with wide straight cutting edge, 79  
   Broken, probably of nephrite, much altered by action of heat, 79  
   Broken nephrite, with flat sides, from Kotzebue Sound, Alaska, 79  
   Rough nephrite, with wide cutting edge ground from two faces, 79  
   Long narrow nephrite, with straight cutting edge and pointed head, 79  
   Broken nephrite, exhibiting original fractured surface and weathering, from Alaska, 80  
   Nephrite, procured by Lieut. Emmons from Tlinkit people of Alaska, 80  
   Nephrite, with sharp cutting edge produced by grinding from both faces, 85  
   Nephrite, made entirely by grinding rough piece of raw material, 87  
 Ægirite, crystals of pyroxene with form similar to that of, 4  
   Crystals similar in form to those of, 17  
 Afghans, conquest of northern India by, 115  
 Age, Neolithic, Palaeolithic, Stone. *See* Neolithic, Palaeolithic, Stone  
 Ahmad Shah Durani, sack of Delhi by, 115  
 Ainos, aboriginal inhabitants of Japan, bear a sacred animal of, 113  
 Alaska, crude fragment of nephrite found in vicinity of Jade Mountain in, 47, 48  
   Small rough, weathered fragment of nephrite from, 48  
   Crude nephrite fragment, with two polished surfaces, from Jade Mountain in, 48  
   Fragment of nephrite from Kotzebue Sound in, 49  
   Section of rough nephrite block obtained by Lieut.-Com. Stoney, U. S. N., in, 49  
   Aboriginal jade implements and tools from, 53, 54  
   Jade knife-sharpener peculiar to, 54  
   Aboriginal nephrite fighting-pick used by natives of, 54, 89  
   Rough nephrite axe, with undefined cutting edge at each end, found in, 76  
   Large nephrite axe from Cape Prince of Wales in, 76  
   Rough nephrite axe, with partly natural and partly ground cutting edge, from, 76

Alaska—*continued*  
   Partially wrought nephrite axe from Cape Prince of Wales in, 77  
   Nephrite adze, with bone holder and handle, from Point Barrow in, 77  
   Hoo-tar (adze) obtained by Lieut. G. T. Emmons in, 77  
   Aboriginal nephrite adze from, 77  
   Adze, set in roughly shaped walrus-bone handle, from, 78  
   Small aboriginal nephrite adze from Hotham Inlet in, 78  
   Well-formed nephrite adze from Chatham Island in, 78  
   Aboriginal small rough nephrite adze, from Kotzebue Sound in, 79  
   Broken adze, probably of nephrite, from Sitka in, 79  
   Broken nephrite adze, with flat sides, from Kotzebue Sound in, 79  
   Rough nephrite adze from, with wide cutting edge ground from two faces, 79  
   Long narrow nephrite adze, with straight cutting edge and pointed head, from, 79  
   Broken nephrite adze, exhibiting original fractured surface and weathering, from, 80  
   Nephrite adze procured by Lieut. Emmons from Tlinkit people of, 80  
   Nephrite hatchet, probably of Tlinkit origin, from Bering Sea coast of, 80  
   Thick nephrite hatchet, with wide straight cutting edge, from Kotzebue Sound in, 80  
   Fragment of nephrite hatchet from Sledge Island in, 80  
   Nephrite chisel, with good cutting edge at lower end, from, 81  
   Very small nephrite knife, probably used for engraving purposes, from, 81  
   Nephrite knife used for domestic purposes by native women of, 81  
   Small chisel-like nephrite knife, with thickish body of irregular section, from, 81  
   Small nephrite knife, with edge at one end produced by grinding, from, 82  
   Long thin-bladed nephrite knife, set in thick holder of wood, from, 82  
   Thin flat nephrite knife, with edge ground from both faces, from, 82  
   Nephrite knife, in form of thin flat triangular slab, from, 82  
   Long finger-like piece of nephrite used as knife-sharpener by aborigines of, 83  
   Relatively long, tapering piece of nephrite used as knife-sharpener by Indians of, 83  
   Long nephrite knife-sharpener with slightly convex faces and rounded sides, from, 83  
   Nephrite knife-sharpener, with perforation near the butt drilled from both faces, from, 83  
   Nephrite scraper, mounted in decorated horn handle, from northwest coast of, 84  
   Nephrite scraper, mounted in handle to be held in right hand, from, 84  
   Nephrite scraper or skin-dresser, consisting of blade broken into shape, from, 84  
   Nephrite pick or root-digger from Point Barrow in, 84  
   Nephrite harpoon-head, set in shank of walrus-bone, from, 85  
   Nephrite hand-pestle from northwest coast of, 85  
 Alaskan, section of rough nephrite block obtained by Lieut.-Com. Stoney from, 49

Alaskan Eskimos, aboriginal jade adze attributed to, 54  
 Albite, percentage of, in specimen, 5  
 Alexander III, Czar of Russia, search for monolith to place on sarcophagus of, 40  
 Alkalis, percentage of, in specimen, 109  
 Alps, Kitoi. *See* Kitoi Alps  
 Altar Set (*Ssü Shé*), nephrite, reign of Ch'ien-lung, China, 178, 179  
   (*Lai, Ho, P'ing*), nephrite, reign of Ch'ien-lung, China, 191, 192  
 Altar Sets (*Sau Shé*), jadeite and nephrite, reign of Ch'ien-lung, China, 166, 167, 176  
 Alumina, percentages of, in specimens, 3, 4, 5, 7, 8, 12, 14, 16, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 59, 60, 61, 62, 71, 74, 88, 91, 93, 95, 97, 98, 104, 106, 109, 118  
   Jadeite a silicate of, 15  
 Alzonne, short stumpy jadeite hatchet, with slightly crescent-shaped cutting edge, from, 68  
   Small jadeite hatchet, short and stumpy, with fairly good cutting edge, from, 68  
   Small flat chloromelanite hatchet, of very regular form, found at, 69  
   Short thick nephrite knife, smooth all over but not polished, from, 69  
 America, nephrite hatchet probably from northwest coast of, 86  
   Nephrite knife, pierced at upper end, probably from northwest coast of, 86  
   Copper age reached by Mexico and Guatemala previous to discovery of, 96  
 America, Central. *See* Central America  
 America, United States of. *See* United States  
 Américainistes, Congrès International des, 96  
 American Antiquarian Society, Proceedings of, 96  
 American Museum of Natural History, New York, 26  
 Amitábha, the Buddha of "boundless age," worship of, 202  
 Amphibole, needles of colorless, 7  
   Specimen consisting of mixture of jadeite and, 8  
   Percentage of, in jadeite specimen, 8  
   Crystals of, and strongly colored mineral provisionally referred to, 9  
   Microstructure of specimen showing presence of, in increased quantity, 9  
   Nephrite a member of group known as, 15  
   Minute scales and fibres of colorless, 22  
   Nephrite pebble composed of scales and fibres of, 22  
   Well-defined prismatic crystals having form of, 22  
   Well-developed crystals of, exhibiting two distinct degrees of refraction, 22  
   Two kinds of nearly colorless, 22  
   Intercalated lenses of, 23  
   Apatite crystals cracked and traversed by, 23  
   Areas of nearly parallel minute scales and fibres of, 23  
   Specimen found to be mixture of fibres of, 24  
   Needles of compact, sparingly present in specimen, 24  
   Fine felt of, with irregularly shaped areas of nearly parallel fibres, 25  
   Grains much cracked and traversed by, 26  
   Prismatic crystals of, lying in several directions, 27



## Amphibole—continued

- Parallel orientations shown by exact parallelism of cross-sections of prisms of, 27  
Microcrystalline to microcryptocrystalline aggregations of fibres of colorless, 28  
Fibres of, in confused aggregation, 28  
Patches of similarly oriented fibres of, 29  
Nephrite rock consisting of aggregations of fibres of colorless, 32  
Mass of nephrite rock consisting of fibres of, 32  
Nephrite microstructure nearly uniform mixture of fibres of, in fan-shaped clusters, 38  
Nephrite with microstructure consisting of fine felt and somewhat larger crystals of, 38  
Cross-sections of crystals and prisms of, exhibiting characteristic cleavage, 39, 43, 44  
Nephrite texture consisting of fine felt of scales and blades of, 39  
Acicular crystals and curved prisms of colorless, 39  
Found by Iddings in two microsections of rough mass of Siberian nephrite, 40  
Compact grains in nephrite fibre-bundles certainly identified as, 42  
Scattered acicular crystals of colorless, 43  
Microscopic brown particles included in larger, 43, 44  
Grayish-white color of nephrite due to contact with altered, 44  
Section of crude nephrite block consisting of compact prisms of, 45  
Extremely fine-fibrous and scaly aggregate of, 45  
Fine-grained aggregation of minute anhedral of, 46  
Beautiful specimen consisting of fibrous, with schistose structure, 46  
Sections of Schwemsaal block found to consist of flakes and fibres of, 46  
Amulet, nine Mayan glyphs engraved on back of lettuce-green jadeite, 56  
(*P'ei Ching*), nephrite, from China, 107  
(*P'ai-tzu*), nephrite, reign of Ch'ien-lung, China, 185  
Analcite, indication of, by chemical analysis, 4  
Analyses, Chemical. *See* Tables  
Ancient Jade, Illustrated Descriptions of, 103 (*note*), 189  
Andalusite, presence of, in almost pure jadeite rock, 17  
Anderson, W., Catalogue of Japanese and Chinese Paintings in British Museum, 200  
Animals (or Signs) of Zodiac. *See* Zodiac  
Annals of the Catechists (Brinton), 96  
Annam, classification of jade objects from, 116  
Jade objects referred to different periods in, 261-264  
Annam, Emperor of, nephrite dragon with young from palace of, 201  
Anorthite, percentage of, in specimen, 5  
Antarctic Expedition, Wilkes, 101  
Anthophyllite, nephrite hatchet, much altered exteriorly, resembling anhydrous, 66  
Antiquities of Mexico (Lord Kingsborough), 96  
Antiquities of the Stone Age, Guide to the, 102  
Apatite, crystals of, cracked and traversed by amphibole, 23  
Remnants of, in rock metamorphosed to nephrite, 23  
Appony, Count, jadeite axe in possession of, 47  
Archaeological Synopsis, 53-56  
Arhats, or Lo-han, principal disciples of Sakyamuni Buddha, 197, 199, 200, 209, 214, 215  
Armlet (*Cho-tzu*), Chinese nephrite, dating from Han dynasty, 108  
(*Cho-tzu*), jadeite, reign of Ch'ien-lung, China, 239  
Very finely polished nephrite, made in Paris, 265  
Armlets (*Cho-tzu*), jadeite, Chia-ch'ing to Kuang-hsi, 238, 240  
Jewelled nephrite, seventeenth and eighteenth centuries, India, 253, 257  
Arsenopyrite, opaque microscopic crystals suggestive of, 27  
Grayish color of nephrite due to presence of minute crystals of, 46  
A characteristic of material from Reichenstein, 46  
Scattered microscopic grains of, 46  
Minute crystals and radiated plumose aggregation of, 46  
Nodular aggregations of jade surrounded by broken crystals of, 46  
Beautiful nephrite specimen containing, in lenticular masses, 46  
High specific gravity of beautiful nephrite specimen due to abundance of, 46  
Art Objects of Jade, 114 *et seq.*  
Arzruni, Prof., nephrite specimen obtained by, from Imperial Lapidary at Peterhof, 35  
Epidote or titanite believed to be recognized in nephrites by, 42  
Microscopical examination of thin sections of nephrite pebbles by, 91

- Asia, nephrite hatchet probably from northeast coast of, 86  
Nephrite knife, pierced at upper end, probably from northeast coast of, 86  
Asia, Central. *See* Central Asia  
Asia, Through (Sven Hedin), 19  
Augite, few, very isolated, prisms of colorless, 42  
Aurangzeb, Mogul emperor, Indian art objects of jade referred to reign of, 115  
Australasia, jade-using islands of, 54  
Austria, jade implements from various localities in, 55  
Discovery of prehistoric objects in, 57  
Small thick jadeite hatchet found in, 94  
Austria, Imperial Museum of Natural History at Vienna in, 47  
Authon, prehistoric jadeite hatchet, with wide rounded cutting edge, found at, 69  
Auvergnier, relics of stone and bronze ages discovered at, 59  
Axe, long thick narrow prehistoric jadeite, found in Mexico, 70  
Nephrite, with straight, slightly chipped cutting edge, from British Columbia, 73  
Rough nephrite, with undefined cutting edge at each end, found in Alaska, 76  
Large nephrite, from Cape Prince of Wales, Alaska, 76  
Rough nephrite, with partly natural and partly ground cutting edge, 76  
Partially wrought nephrite, from Cape Prince of Wales, Alaska, 77  
Nephrite, sawn from boulder and smoothed by grinding, 85  
Nephrite broad, with convex faces, crescent-shaped cutting edge, and narrow head, 86  
Very flat nephrite, with one side longer than the other, 87  
Nephrite, with wide crescent-shaped cutting edge, convex faces, and thin sides, 88  
Nephrite, of lengthened form, with convex sides tapering upward to rough point, 88  
(*Fu*), long narrow nephrite, with crescent-shaped cutting edge and slightly curved faces, 88  
Ceremonial (*Fu*), of nephrite, reign of Ch'ien-lung, China, 208

- Bahadur Shah, King of Delhi, jewelled nephrite bowl formerly the property of, 253  
Baltistan. *See* Little Tibet  
Bar, rectangular nephrite, cut in establishment of A. Berquin-Varangoz, Paris, 266  
Barbot de Marny, Prof., small piece of Tamerlane's nephrite monolith obtained by, 26  
Barkul, cuboidal section of water-worn nephrite pebble said to have come from, 25  
Small water-worn nephrite pebble from, 25  
Part of nephrite boulder from, with naturally polished exterior, 25  
Portion of large water-worn nephrite boulder said to come from, 26  
Dark-green nephrites of, 33  
Basin, large oval (*Ta Hsi*), of nephrite, reign of Ch'ien-lung, China, 232, 233  
Battle-axe, large nephrite aboriginal, from New Caledonia, 55, 90  
Bauer, Prof. Max, microscopical examination and chemical analysis of jade specimens by, 3  
Declaration of Noetling to, affirming absence of jade *in situ* in Yunnan, 10  
Mixture of jadeite, plagioclase, and nephelite found in specimen by, 18  
Three thin nephrite sections examined microscopically by, 42  
Bead, tubular (*Kudatama*), of jadeite, used with curved bead in early times in Japan, 99, 113  
Curved (*Magatama*), of jadeite, much used in early times in Japan, 113  
Beads, two small polished, of Burmese jadeite, 15  
Two jadeite, showing Oriental form of drilling, 15  
Mandarin (*Ch'ao Chu*), of jadeite, Chia-ch'ing to Kuang-hsi, 239  
Beaker, flat (*Pien Hua Ku*), of nephrite, reign of K'ang-hsi, China, 147  
Hexagonal (*Hua Ku*), of nephrite, reign of K'ang-hsi, China, 148  
Small (*Hsiao Tsun*), of nephrite, reign of Ch'ien-lung, China, 217  
(*Ku Tung Hua Ku*), of ancient bronze design, carved in nephrite, Chia-ch'ing, China, 235  
Beal, Prof., record of T'ai Tsung's journey translated by, 145  
Bear, Great. *See* Great Bear  
Beichlingen, jadeite (?) specimen in castle at, 92

- Belaja River, rough nephrite fragment fractured out of boulder from, 34  
Bells (*Chung*), nephrite, Han dynasty and Ch'ien-lung, China, 117, 208, 209  
Bergen Hill, New Jersey, diabantite from, 15  
Bering Sea, aboriginal jade implements from Siberian coast of, 54  
Aboriginal nephrite adze procured from Eskimos at Port Clarence on coast of, 78  
Nephrite hatchet, probably of Tlinkit origin, from Alaskan coast of, 80  
Nephrite axe from Siberian coast of, 85  
Nephrite adze, with sharp cutting edge, from Siberian coast of, 85  
Berlin, human tooth inlaid with turquoise in Ethnological Museum at, 56  
Berlin Museum, Humboldt Celt in Ethnological Department of, 55, 96  
Bern, discovery of prehistoric objects near, 57  
Bernier, François, French historian and philosopher, jade seen in India by, 115  
Berquin-Varangoz, A., noted Paris lapidary, jadeite figure of Venus de Milo made by, 16, 264  
Examples of modern French workmanship carved at workshop of, 116  
Profile portrait of Heber Reginald Bishop executed upon nephrite in establishment of, 264  
Round nephrite bonbonnière executed by artists for, 265  
Finely polished rectangular nephrite bar cut in establishment of, 266  
Berwerth, Prof. F., small piece of jadeite presented to Collection by, 47  
Opinion of, on nephrite pebble found in Gratz, Styria, 91  
Bhadraṛāja, first of eighteen Lo-han, or Arhats, principal disciples of Buddha, 197  
Bhamo, establishment of safe and rapid steam communication from, 7  
Jade sold by small traders at, 10  
Digging in jade-mines at, carried on by Kachins, 10  
Bienne, Lake. *See* Lake Bienne  
Bishop, Heber Reginald, profile portrait of, executed in relief upon nephrite, 264  
Black Jade River. *See* Karakash  
Blake, W. W., jadeite specimen procured by, in Mexico, 100  
Blowpipe, strong chromium reaction of jadeite before, 3  
Results of test of jadeite specimen before, 8  
Tests with, showing jadeite slightly altered by hydration, 9  
Specimen giving reaction for chromium before, 9  
Black substance giving reaction for chromium before, 9  
Fusion of gray mineral before, gives strong sodium flame indicating jadeite, 22  
Schwemsaal block experimented upon by Breithaupt with, 46  
Bôdhidharma, first Buddhist patriarch of China, twenty-eighth of India, 228, 230  
Bodmann, thin flat nephrite knife found among remains of pile-dwellings at, 68  
Bonbonnière, round nephrite, executed in establishment of A. Berquin-Varangoz, Paris, 265  
Bonifacius Mountain, flat jadeite (?) hatchet found on, 92  
Bonnieux, small thick jadeite chisel, with rounded cutting edge, found at, 69  
Book of Changes of Chou Dynasty, 108  
Book of History. *See* Shu Ching  
Book of Poetry, collection of ancient Chinese odes, 211  
Book of Rites, use of wine-cups during marriage ceremony described in, 193  
Borgholz, flat jadeite hatchet found at, 93  
Bottle, inlaid nephrite, seventeenth century, India, 256  
Boulder, carved (*Shan-tzu*), of nephrite, reign of Ch'ien-lung, China, 198  
Bourget, Lake. *See* Lake Bourget  
Bowenite (Chinese *yü*), sacrificial tablet of, from China, 107  
Bowl (*Lung Erh Hsi*), nephrite, with two dragon-handles, from China, 123  
(*Wan*), nephrite, Ming dynasty, China, 135  
Covered (*Kai Wan*), of jadeite, reign of K'ang-hsi, China, 141  
Jadeite (*Wan*), reign of Ch'ien-lung, China, 162  
And cover (*Yuan Kai Wan*), round nephrite, reign of Ch'ien-lung, China, 187  
With cover (*Kai Wan*), nephrite, reign of Ch'ien-lung, China, 188  
With handles (*Hsi-tzu*), nephrite, reign of Ch'ien-lung, China, 192  
With handles (*Ta Hsi-tzu*), nephrite, reign of Ch'ien-lung, China, 194



Bowl—continued

- With handles (*Yuan Hsi*), nephrite, reign of Ch'ien-lung, China, 220, 221
- With cover (*Ta Kai Wan*), large nephrite, Chia-ch'ing to Tao-kuang, 236
- Very old nephrite, India (probably), 252
- Nephrite, prior to nineteenth century, India, 252
- Shallow nephrite, made in St. Petersburg, 266
- Bowls (*Wan*), pairs of nephrite, Ming and K'ang-hsi, China, 138, 150
- (*Fan Wan*), pair of jadeite, reign of K'ang-hsi, China, 140
- (*Fan Wan*), pair of jadeite, reign of Ch'ien-lung, China, 164, 165
- (*Wan*), jadeite and nephrite, Ch'ien-lung and Chia-ch'ing, China, 165, 234
- With handles (*Ta Yuan Hsi-tzu*), nephrite, reign of Ch'ien-lung, China, 227, 228
- Nephrite, seventeenth century, India, 248, 249, 250, 251, 253
- Box, round (*Yuan Ho*), of nephrite, reign of Ch'ien-lung, China, 211, 212
- And cover, nephrite inlaid with gold, eighteenth century, India, 258
- Boxes, jewelled nephrite, seventeenth century, India, 252, 255
- Bozzachi, M., paper-knife cut in nephrite by, 265
- Braam, S. A. van, Dutch civil engineer, Leyden Plate discovered by, 95, 96
- Bracelet, annular piece of jadeite intended for, 12
- Piece of jadeite that evidently formed core of, 13
- Annular portion surrounding jadeite disc removed to form, 13
- Rough flat piece of jadeite perhaps affording material for, 13
- Breithaupt, Prof., Schwemal block experimented upon and described in 1815 by, 46
- Breslau, prehistoric small flat chloromelanite hatchet in museum at, 92
- Breslau, Chemical Institute of University of, 43
- Brinton, Dr., *Annals of the Cakchiquels*, 96
- On finely sculptured jadeite amulet said to have been found in Mexico, 100
- British, Burma under rule of, 10
- British Columbia, nephrite pebble found between Fraser and Thompson rivers in, 47
- Aboriginal jade implements and tools from, 53
- Aboriginal fighting-pick of compact spinach-green nephrite from, 54, 89
- Aboriginal gritstone found in main burial-place at Lytton in, 73
- Nephrite axe, with straight, slightly chipped cutting edge, found in, 73
- Long narrow nephrite hatchet found at east end of Nicola Lake in, 73
- Small flat nephrite hatchet, with straight cutting edge and rounded sides, from, 74
- Nephrite hatchet, with slightly curved cutting edge formed by grinding, found in, 74
- Nephrite hatchet, tapering to head, which is much broken, from, 74
- Nephrite chisel, of uniform width throughout its whole length, found in, 74
- Short thick nephrite chisel, broken at top, found in, 75
- Short nephrite knife, with wide slanting cutting edge, found in, 75
- Small wedge-shaped nephrite knife, with flat faces, sides, and top, from, 75
- Small nephrite knife, with wide cutting edge in good condition, found in, 75
- Thick nephrite knife, with wide cutting edge slightly notched, found in, 75
- Brittany, long chloromelanite hatchet, of remarkably beautiful form, from, 68
- Prehistoric jade weapons and implements dug up from ancient tombs in, 116
- Bronze Age, relics of, discovered at different places in Yverdon district, Switzerland, 59
- Brush-holder (*Hsiao Tung*), small nephrite, reign of Ch'ien-lung, China, 245
- Brush-holders (*Pi Tung*), jadeite and nephrite, reign of Ch'ien-lung, China, 170, 176, 197, 202, 203, 223, 225, 226, 227
- Brush-pot (*Pi Tung*), nephrite, supposed to be of Sung dynasty in China, 117
- Buddha, Sakyamuni, nephrite image of (*Fo Hsiang*), reign of K'ang-hsi, China, 154
- Lo-han, or Arhats, principal disciples of, 197, 199, 200, 209, 214, 215
- Famous alms-bowl of, 228
- Buddhas, the Seven, 173, 174
- Buddhism, antipathy of Tai-ping rebels to, 230
- Contemplative school of, 230
- Buddhist Art in India (Prof. Grünwedel), 174 (*note* 1)

- Buddhist Bowl (*Po*), nephrite, reign of Ch'ien-lung, China, 202
- Buddhist Column (*Fo Tung*), nephrite, reign of Ch'ien-lung, China, 214, 215
- Buddhist Figures (*Lo-han*), nephrite, reign of Ch'ien-lung, China, 197, 209
- Buddhist Monk (*T'ang Seng*), nephrite figure of, reign of K'ang-hsi, China, 145
- Buddhist Records of Western World, in Trübner's Oriental Series, 145
- Buddhist Scriptures, translation of, by Yuan-chuang, 145
- Buddhists, incense introduced into China by, 141
- Burma, rough earth-covered piece of jadeite brought from, to Shanghai, 6
- Exterior section of weathered mass of jadeite found in, 6
- Section of weathered block of coarsely crystalline jadeite from, 6
- Section of jadeite boulder brought to Peking from, 6
- Section of fissured and stained boulder found in, 7
- Jadeite specimen brought by way of Yunnan from, 7
- Jadeite carried overland from jade-quarries of, 7
- Fragment of translucent coarsely crystalline jadeite from, 7
- Small cylinder of jadeite probably from, and cut in China, 8
- Fragment of weathered mass of jadeite from, 8
- Small crude piece of deep-green jadeite from, 8
- Irregularly shaped fragment of lettuce-green jadeite from, 9
- Triangular piece sawed from jadeite mass found in, 9
- Irregularly shaped weathered fragment of jadeite from, 9
- Crude fragment of jadeite labelled as from Yunnan, but probably originally found in, 9
- Fragment of jadeite said to be from Yunnan, but probably from, 10
- T'ang Jung-tso on, as real source of so-called "Yunnan jade," 10
- Jade supplies from, through Yunnan, 10
- Under British rule, 10
- Digging at jade-mines in, carried on by Kachins, 10
- Two places where jade is found in, 10
- Digging of jade in, and its export from, 10
- Yunnan traders still go direct to mines of, for jade, 10
- Fragment of coarsely crystalline jadeite probably from, via Yunnan, 10
- Crude fragment of highly crystalline jadeite probably from, through Yunnan, 10
- Cuboidal fragment of jadeite probably from, via Yunnan, 11
- Small crude fragment of jadeite probably from, by way of Yunnan, 11
- Rough fragments of jadeite probably from, via Yunnan, 11
- Method of detaching jade from bed used by jade-miners of, 11
- Flat fragment of jadeite probably from, by way of Yunnan, 11
- Broken cylindrical core of jadeite probably from, via Yunnan, 12
- Flat circular piece of jadeite probably from, by way of Yunnan, 12
- Cylindrical cores of jadeite probably from, through Yunnan, 12
- Small jadeite disc probably from, by way of Yunnan, 13
- Partly cut piece of jadeite probably from, through Yunnan, 13
- Rough partly cut piece of jadeite probably from, via Yunnan, 13
- Partly worked jadeite fragment probably from, through Yunnan, 13
- Small jadeite disc probably from, by way of Yunnan, 13
- Worked fragments of jadeite probably from, through China, 14
- Fragment of Chinese ornamental pendant of jadeite probably from, 14
- Two beads and slide of jadeite probably from, through China, 15
- Two jadeite beads probably from, by way of China, 15
- Small thin slab of very dark jadeite possibly from, 18
- Yunnan great entrepôt for distribution throughout China of jadeite of, 33
- Belief regarding amulets in, 106
- Elephants formerly sent to China as tribute from, 146
- Burma, Upper. *See* Upper Burma
- Burma-Yunnan, section of jadeite boulder labelled, 6
- Jadeite specimen ascribed in origin to, 7
- Bushell, Dr. Stephen W., C. M. G., section of boulder procured for Collection by, 6
- Jadeite specimen secured in Peking by, 7
- Nephrite pebbles obtained by, in Peking, 21
- Section of water-worn boulder of translucent nephrite secured by, 23

Bushell, Dr. Stephen W., C. M. G.—continued

- Section of water-worn nephrite boulder secured in Peking by, 23
- Cuboidal section of water-worn nephrite pebble obtained by, 25
- Small water-worn nephrite pebble obtained in Peking by, 25
- Part of nephrite boulder procured in Peking by, 25
- Nephrite block obtained in Peking by, 26
- Section of good-sized water-worn nephrite boulder procured for Collection by, 27
- Description of nephrite specimen obtained at Peking by, 33
- Introduction to T'ang's essay by, 103 (*note*)
- Pamphlet on Chinese Porcelain by, 140
- Nephrite screen presented to Collection by, 243
- Busz, Dr. Carl, results of analysis of jadeite specimen by, 3
- Chemical analysis of material from nephrite slab made by, 43
- Butterfly (*Hu-tieh*), nephrite, reign of K'ang-hsi, China, 144
- Jewelled jadeite, eighteenth century, India, 256, 257
- Button (*Niu-tzu*), jadeite, reign of Ch'ien-lung, China, 237
- Caesar, Julius, lake-dwellings thought by Keller to have lasted until time of, 57
- Cakchiquels, *Annals of the* (Dr. Brinton), 96
- Calcite, twinning of molecules observed in, 3
- Calcium, percentages of, in specimens, 91, 93
- Caledonia, New. *See* New Caledonia
- Canada, large water-worn nephrite pebble found in Yukon district of, 49
- Canton, jade supplies sent to, 10
- Diligent inquiry shows that no jade is produced in, 10
- Meaning of name, as applied to jade, 10
- Jade bought by Cantonese at Mandalay and shipped to, 10
- Imports of crude jade into, 10
- Possibly chief entrepôt for Burmese jadeite, 10
- Cantonese, jade sold to, by traders at Mandalay, 10
- Principal buyers of jade after removal from mines, 10
- Cape Prince of Wales, large nephrite axe from, 76
- Rough nephrite axe, with partly natural and partly ground cutting edge, from, 76
- Partially wrought nephrite axe from, 77
- Small nephrite knife, with edge at one end produced by grinding, from, 82
- Long thin-bladed nephrite knife, set in thick holder of wood, from, 82
- Thin flat nephrite knife, with edge ground from both faces, from, 82
- Nephrite knife, in form of thin flat triangular slab, from, 82
- Nephrite scraper or skin-dresser, consisting of blade broken into shape, from, 84
- Nephrite harpoon-head, set in shank of walrus-bone, from, 85
- Carinthia, small thick jadeite hatchet found in, 94
- Carl, Landgrave, prehistoric jadeite hatchet sent to Royal Museum at Cassel by, 91
- Cartailhac, Emil, on absence of prehistoric jade implements from Spain and Portugal, 94
- Casket, Seal (*Yin Ho*), of nephrite, reign of K'ang-hsi, China, 156
- Cassel, Prussia, Royal Museum at, 91
- Casts from European Museums, 55, 90-96
- Catalogue-numbers of Specimens. *See* Arabic figures in left margin of Catalogue
- Catalogue of Japanese and Chinese Paintings in British Museum, 200
- Celestial Mountains. *See* T'ien-Shan
- Celsius, jadeite crystals under increased heat of ninety degrees, 16
- Celt, archaic (*Yao Chan*), of nephrite, from China, 105
- Ornamented (*Hua Chan*), of nephrite, from China, 106
- Decorated (*Yao Chan*), of nephrite, from China, 106
- Small (*Hsiao Chan*), of nephrite, from China, 106
- Engraved (*Hua Chan*), of nephrite, period unknown, from China, 112
- Celts, nephrite pebbles having form and outline of small, 19
- Central America, hieroglyphic inscriptions originating in, 55
- Ornaments and ceremonial objects of jadeite from, 56
- Cast of Leyden Plate, ceremonial jadeite celt from, 95, 96
- Central Asia, fragment of water-worn weathered nephrite boulder from, 24
- Barkul situated near eastern end of T'ien-Shan in, 25
- Great nephrite monolith on tomb of Tamerlane at Samarkand in, 26
- K'un Lun Mountains only definitely known source of jade in, 26



Cerolite, rough nephrite fragment with one corner having appearance of, 44

Chains, jade (*Yü Lien-tzu*), cut out of nephrite block, Ming dynasty, China, 134

*Ch'ai Tao* (Chinese). See Cleaver

*Ch'a Kang* (Chinese). See Cups

Chang Kuo, Taoist divinity, 161, 163

Chang Sêng-yu, famous Chinese artist, 232 (see also note 3)

Chang-Sha Fu, nephrite pebble said to have been found near, 29

Chang T'ien-chi, Chinese hermit, 208 (note 1)

Chang Tsung, Chinese emperor, of Chin dynasty, 155

*Ch'ao Chu* (Chinese). See Beads

*Ch'a Ping* (Chinese). See Plaque, Screen, and Screens

Chapman, On the Working of Greenstone, 87, 90

On use of heitiki (neck-ornament) by Maoris of New Zealand, 101

Character, ancient Chinese "tadpole," 14

Chara-Jelga River, small rough fragment of nephrite from, 34

Section of small nephrite boulder from, 34

Small nephrite slab taken by Jaczewski from, 35

Rough fragment of primary nephrite obtained by Jaczewski in, 36

Chariot-wheel Nave (*Kang-T'ou*), part of nephrite, 103

Charock River, Little. See Little Charock River

Chatham Island, well-formed nephrite adze, with wide straight cutting edge, from, 78

*Ch'a Wan* (Chinese). See Cups

Ch'ê Ching, old Chinese book, jade chariot-naves mentioned in, 104

Chemical Analyses. See Tables

Chemical Institute of University of Breslau, 43

Cheou Lao, French transliteration of Chinese Shou Lao, 152

Chia-ch'ing, Chinese emperor, jade objects referred to reign of, 115, 234-242, 247, 248

Chiapas, lettuce-green jadeite amulet possibly originally from, 56, 100

*Chi Ch'ing* (Chinese). See Musical Stones

*Chieh-tzu* (Chinese). See Comb

Ch'ien-lung, Chinese emperor, jade objects referred to reign of, 115, 159-234, 236-239, 243-246

Jade sceptre sent to George III of England by, 148

*Chih Huan* (Chinese). See Finger-ring

*Ch'ih-lung* (Chinese), lizard-like monster represented on bronzes, jades, etc., 109, 113, 118, 143

*Ch'ih Lung Hsün Tsü* (Chinese). See Dragon with Young

Chinsian Indians, aboriginal fighting-pick of nephrite obtained by Dr. Powell from, 54, 89

China, jadeite distributed from Yunnan to jade-working establishments of, 7

Small cylinder of jadeite probably from Burma and cut in, 8

Jadeite fragment purchased by Dr. Edkins in, 10

Jade supplies intended for, 10

Much jade still enters, via Yunnan, 10

Lapidaries from other parts of, still purchase jade at Têng-yueh Chow, 10

Worked fragment of jadeite probably from Burma through, 14

Worked jadeite fragment from, probably of Burmese origin, 14

Fragment of jadeite pendant from, probably of Burmese origin, 14

Two beads and slide of jadeite probably from Burma through, 15

Two jadeite beads from, probably of Burmese origin, 15

Return of French Expedition from, 15

Fragment of oblong nephrite medallion with dragons' heads, carved in, 27

Broken nephrite ornament worked in, 28

Fragment of oval carved nephrite medallion worked in, 28

Broken oblong nephrite medallion fashioned in, from Turkistan material, 28

Part of decorated cover of nephrite jar fashioned in, 29

Four nephrite pebbles said to have been found in river of, 29

Examples of possible occurrence of jade *in situ* in, 29

Section of rough water-worn nephrite boulder said to be from Ho-nan in, 29

No exact knowledge of finding of nephrite *in situ* in, 29

Dependent on jade-mines or jade-rivers of Turkistan for jade material, 29

Great jade-using but not jade-producing country, 29

Jade may yet be found in place in, 29

## China—continued

Section of much-weathered nephrite mass said to be from Ho-nan in, 30

Fragment of mass of compact and homogeneous nephrite said to come from, 30

Rough nephrite pebble said to come from Ho-nan in, 30

Thick nephrite disc said to come from province of Ho-nan in, 30

Nephrite disc cut in, from material probably of Turkistan origin, 30

Cut section of nephrite block said to have come from Ho-nan in, 31

Outer slab of nephrite boulder said to be derived from Ho-nan in, 31

Long flattish nephrite boulder said to have been found in river-bed of, 31

Part of nephrite boulder assigned to, but possibly from Turkistan, 32

Cylindrical core drilled from large mass of nephrite in, 33

Oblong polished nephrite slab assigned to, but possibly from Turkistan, 33

Section of nephrite boulder said to be from Yunnan in, 33

Yunnan great entrepôt for distribution of Burmese jadeite throughout, 33

Prehistoric jade implements from, 53, 54

Long narrow nephrite axe, with crescent-shaped cutting edge, from, 88

Flat nephrite hatchet, smoothed all over, with straight cutting edge, from, 89

Thin cleaver-shaped cutting-implement of nephrite, perforated near one end, from, 89

Tomb Jades (*Han Yü*) from, 102-113

Nephrite chariot-wheel nave from, 103

Nephrite tablet of rank from, 104

Nephrite sacrificial tablet from, 104

Famous ancestral mountain of ancient, 104

Pierced nephrite medallion from, 105

Archaic nephrite celt from, 105

Tassel-slide of nephrite from, 105

Ornamented nephrite celt from, 106

Decorated celt of nephrite from, 106

Small nephrite celt from, 106

Sacrificial tablet of bowenite (*yü*) from, 107

Nephrite amulet, in form of celt, from, 107

Large flat nephrite gong from, 107

Nephrite libation-cup, Han dynasty, 108

Nephrite armet, Han dynasty, 108

Archer's thumb-ring of nephrite, Han dynasty, 109

Nephrite signet, Han dynasty, 109

Nephrite girdle-ornament, Han dynasty, 109

Motive used from time immemorial in, for decoration of girdle, 109

Two square nephrite seals, Han dynasty, 110

Seals used in, to authenticate autograph writings and documents, 110

Horn-shaped nephrite cup, T'ang dynasty, 110

Lotus-leaf nephrite cup, T'ang dynasty, 110

Lotus-leaf nephrite vase, about thirteenth century, 111

Nephrite girdle-appendage, about thirteenth century, 111

Nephrite wine-pot, early Ming dynasty, 111

Nephrite sacrificial vessel, period unknown, 112

Engraved nephrite celt, period unknown, 112

Three nephrite signets, period unknown, 112

Nephrite wine-cup, period unknown, 113

Nephrite sacrificial vessel, early Ming dynasty, 113

Classification of jades from, 114, 115

Nephrite bell, Han dynasty, 117

Nephrite brush-pot supposed to be of Sung dynasty, 117

Perforated nephrite medallion, Sung dynasty, 117

Nephrite wine-jug probably dating from before Ming dynasty, 118

Jadeite lion dating probably from before Ming dynasty, 118

Jadeite stork, Ming dynasty, 118

Jadeite and nephrite snuff-bottles, Ming dynasty, 119, 122, 139

Water-receptacle, Ming dynasty, 119

Small quadrangular jadeite vase, Ming dynasty, 119

Jadeite pendant, Ming dynasty, 119

Pair of jadeite cups, Ming dynasty, 120

Jadeite oval dish, Ming dynasty, 120

Jadeite tray, Ming dynasty, 120

Jadeite plum-tree vase, Ming dynasty, 120

Gourd-shaped jadeite vase, Ming dynasty, 121

Jadeite vase, Ming dynasty, 121

Use of snuff comparatively recent in, 122

Jadeite-quartzite cup, Ming dynasty, 122

Artist's nephrite water-dish, Ming dynasty, 122

Nephrite bowl with two dragon-handles, Ming dynasty, 123

Square nephrite vase, Ming dynasty, 124

Nephrite double-cylinder vase, Ming dynasty, 124

## China—continued

Nephrite pendant, Ming dynasty, 125

Writers' nephrite hand-rests, Ming dynasty, 125, 136

Nephrite girdle-buckles, Ming dynasty, 125, 126

Pair of nephrite peaches, Ming dynasty, 126

Nephrite crab, Ming dynasty, 126

Nephrite screen, Ming dynasty, 126

Small nephrite screen, Ming dynasty, 127

Large nephrite dish, Ming dynasty, 127, 128

Large and small nephrite lions, Ming dynasty, 128

Nephrite water-receptacles, Ming dynasty, 128, 135

Small nephrite vase, Ming dynasty, 128

Rectangular nephrite vase, Ming dynasty, 129

Nephrite miniature figure, Ming dynasty, 129

Nephrite miniature loving-cup, Ming dynasty, 129

Nephrite medallions, Ming dynasty, 129, 131

Nephrite pen-rests, Ming dynasty, 130

Ornamental knobs of nephrite, Ming dynasty, 130, 131

Nephrite incense-burner, Ming dynasty, 131

Quadrangular vase of nephrite, Ming dynasty, 131

Nephrite elephant, Ming dynasty, 132

Floral vase of nephrite, Ming dynasty, 132

Nephrite paper-weight, Ming dynasty, 132

Grotesque nephrite monster with vase, Ming dynasty, 133

Nephrite miniature flower vase, Ming dynasty, 133

Nephrite wine-cup, Ming dynasty, 133

Deep flat-bottomed nephrite dish, Ming dynasty, 134

Jade chains, Ming dynasty, 134

Nephrite bowl, Ming dynasty, 135

Six nephrite table-spoons, Ming dynasty, 136

Double flower vase of nephrite, Ming dynasty, 136, 137

Nephrite temple figure, Ming dynasty, 137

Nephrite seal, Ming dynasty, 137

Pair of nephrite bowls, Ming dynasty, 138

Pair of nephrite dishes, Ming dynasty, 138

Nephrite dove, Ming dynasty, 138

Small nephrite vase of beaker-like form, Ming dynasty, 139

Nephrite incense-burner, Ming dynasty, 139

Jade objects referred to reign of K'ang-lisi in, 139-158

Incense introduced by Buddhists into, 141

Lotus much cultivated in shallow inland waters in, 146

Elephants formerly sent from Burma and neighboring countries as tribute to, 146

Passion-flower recently introduced into, 150

Jade objects referred to reign of Ch'ien-lung in, 159-234, 236-239, 243-246

Jade objects referred to reign of Chia-ch'ing in, 234-242, 247, 248

Manchu conquest of, 261

China, Southern. See Southern China

China, Southwestern. See Southwestern China

China War, Incidents of (Capt. Henry Knollys, R. A.), 124

Chinese, jade bought at Bhamô by, 10

Green variety of jade called *pi-yü*, or moss-jade, by, 26

Kind of nephrite known as *mo-yü*, or ink-jade, by, 27

Discoloration called "goose-crest brown" by, 29

Nephrite used by, for works of art in jade, 31

Jade used by, for hairpins, butterflies' wings, and leaflet earrings, 33

Jade celts regarded as thunderbolts and worn as amulets by, 54

Cylindrical drill known to and used by, for many ages, 56

Jade hatchets, washed out of ground by storms, regarded as thunderbolts by, 89

All-devouring storm-god of, 106 (see also Ogre)

Chinese Classics (translated by Legge), 156 (note), 232 (note 9)

Chinese Imperial Maritime Customs, 10, 211 (note)

Chinese Language, crude fragment of jadeite labelled in, 9

"Tadpole" character in ancient, 14

Chinese Music (J. A. Van Aalst), 211 (note)

Chinese Paintings in British Museum, Catalogue of Japanese and, 200

Chinese Porcelain, Dr. Bushell's pamphlet on, 140

Chinese Reader's Manual (Mayer), 242

Chinese Slicing-wheel, nephrite block showing marks of, 23

Chinese Turkistan, dark-green nephrites of, 33

*Ch'ing* (Chinese). See Gong

Chisel, small narrow thick nephrite, ground to cutting edge from two faces, 63

Small thick nephrite, found among remains of pile-dwellings of Lake Neuchâtel, 63

Long thick jadeite, with rounded body and sharp cutting edge, 63

Small thick jadeite, with rounded cutting edge, found at Bonnieux in France, 69

Short thick prehistoric jadeite, found in Mexico, 71



Chisel—*continued*

- Thick chloromelanite, with rounded body and sharp cutting edge, found in Mexico, 71
- Jadeite, with thick body, wide cutting edge, and smoothed faces, from Guatemala, 72
- Nephrite, of uniform width throughout its whole length, found in British Columbia, 74
- Short thick nephrite, broken at top, found in British Columbia, 75
- Nephrite, with good cutting edge at lower end produced by grinding, 81
- Nephrite, of rounded pentagonal form and short dull cutting edge, 86

*Chiu Hu* (Chinese). See Wine-pot

*Chiu Kuan* (Chinese). See Vessel and Wine-jug

*Chiu Pei* (Chinese). See Loving-cup, Wine-cup, and Wine-cups

Chlorite, optical properties of colorless, 40

Chloromelanite, small thin slab of dark material described as jadeite passing into, 18

Prehistoric implements of, from France, 53

Implements of, found in Europe, 55, 92

Short stout hatchet of, with sharp crescent-shaped cutting edge, 57

Small hatchet of, with broad cutting edge, 57

Small flat hatchet of, found in remains of Swiss pile-dwellings, 60

Part of small thin flat hatchet of, with sharp regular cutting edge, 63

Specimens of, collected from prehistoric settlements in Lake Constance region, 66

Long hatchet of, remarkably beautiful in form, from Brittany, France, 68

Small flat hatchet of, found at Alzonne in France, 69

Thick chisel of, with rounded body and sharp cutting edge, from Mexico, 71

*Cho-tzu* (Chinese). See Armlet and Armlets

Chou Kung, famous Duke of Chou, 108

Chou Li, or Ritual of Chou Dynasty, 104

Chou Yi, or Book of Changes of Chou Dynasty, 108

Chow Kung, reputed inventor of Chinese precursor of mariner's compass, 167

Chow Sin, Chinese emperor, of Yin dynasty, 167

Chromic Iron, piece of nephrite with many inclusions of brownish, 39

Nephrite specimens showing inclusions of dark metallic substance suggesting, 41, 51, 52

Black color of nephrite due to inclusions of, 45

Chromic Oxide, percentages of, in specimens, 26, 40, 43

Chromite, substance proved by blowpipe test to be, 9

Inclusions of black metallic mineral supposed to be, 25

Mineral that may presumably be, 26

Black metallic mineral which appears to be, 29

Crystals of black mineral supposed to be, frequent in nephrite, 34

Inclusions of black metallic substance which is probably, 34, 35, 36, 37, 39

Nephrite showing inclusions of small black crystals which are probably, 35

Section of rough nephrite mass characterized by sparing presence of, 40

Chromium, indication of, in jadeite specimen before blowpipe, 3

Jadeite specimens which gave reactions for, 8, 9

Substance giving reaction for, before blowpipe, 9

Coloring matter probably composed of some compound of, 15

Traces of, found upon analysis, 26

Zones of rich green characteristic of, 35

*Chüeh Pei* (Chinese). See Cup

Chukchis, reindeer people of Asiatic coast opposite Alaska, 54, 85

*Chung* (Chinese). See Bells

Chung-li Ch'üan, Taoist divinity, 161, 163

Chün Hsien Chu Shou, Chinese god of longevity, 226

*Chu-tzu* (Chinese). See Wine-pitcher

Clarence, Port. See Port Clarence

Clarke, Prof. F. W., reduction of Dr. Foote's analysis of jadeite block by, 5

Reduction of Foote's analysis of jadeite core by, 12

Analysis of coarse-grained jadeite specimen, with reduction by, 14

Reduction of Walden's analysis of jadeite pendant by, 14

Reduction of Foote's analysis of jadeite fragments by, 17

Reduction by, of Foote's analysis of section of nephrite block, 23

Walden's analysis of nephrite fragment calculated by, 24

Reduction by, of Foote's analysis of large nephrite block, 26

Clarke, Prof. F. W.—*continued*

Reduction of Foote's chemical analysis of section of nephrite boulder by, 27

Reduction of Walden's analysis of fragment of oblong nephrite medallion by, 28

Reduction by, of Walden's analysis of broken Chinese ornament, 28

Walden's analysis of broken oblong nephrite medallion, with reduction by, 28

Calculation by, of Walden's analysis of flattish nephrite boulder, 32

Analysis of part of nephrite boulder with reduction by, 32

Analysis of oblong polished nephrite slab calculated by, 33

Walden's analysis calculated by, showing chemical composition of nephrite, 38

Calculation by, of Foote's analysis of specimen of Siberian nephrite, 40

Calculation by, of Dr. Steiger's analysis of fragment of huge nephrite block, 41

Reduction of Dr. Carl Busz's chemical analysis made by, 43

Foote's chemical analysis of nephrite material reduced by, 43

Reduction of Walden's analysis of section of crude nephrite block by, 45

Reduction by, of Foote's analysis of specimen of Alaskan nephrite, 48

Reduction by, of chemical analysis of nephrite specimen from Alaska, 48

Reduction of Walden's analysis of New Zealand (?) nephrite by, 49

Reduction of Walden's analysis of small thin broken slab of nephrite by, 50

Chemical analysis of material of jadeite hatchet calculated by, 60

Analysis of material of nephrite hatchet calculated by, 61

Walden's analysis of material of prehistoric nephrite hatchet calculated by, 62

Results of chemical analysis by Foote, with reduction by, 74

Analysis of material of nephrite axe by Walden, with reduction by, 88

Reduction of Walden's analysis of piece of spinach-green nephrite by, 97

Reduction of Walden's analysis of Chinese tablet of rank by, 104

Reduction by, of Walden's analysis of ornamented nephrite celt, 106

Walden's analysis of nephrite in archer's thumb-ring reduced by, 109

Clasps, jewelled nephrite, nineteenth century, India, 260

Cleaver (*Chai Tao*), thin nephrite, perforated near one end by drilling, 89

Clee-tar (Knife), smoothed on only one face, from Alaska, 81

Clinoclone, colorless mineral resembling, 22

Narrow zone of colorless mineral supposed to be, 25

Minute areas and streaks supposed to consist of colorless, 26

Variety of, found in Jordansmühl specimen, 40

Nephrite specimen containing nearly twenty-four per centum of, 40

Chloritic mineral probably identified as, 41

Colorless mica-like mineral with optical properties of, 63

Cloppenburg, east of large flat chloromelanite hatchet from, 92

Cohen, Prof. E., jadeite fragment presented to Collection by, 16

Investigations into character of jadeite specimen by, 16

Colonial Exhibition, English, of 1886, 116, 265

Color of Specimen. See Summary preceding Description of Specimen

Columbia, British. See British Columbia

Columbia University, specimens tested for resistance to compression by Prof. Woolson of, 4

Compression and tensile tests conducted by Woolson in engineering laboratory of, 51

Comb (*Chieh-tzu*), small jadeite, reign of Ch'ien-lung, China, 167

Compression Tests, 4, 5, 23, 27, 32, 40, 42, 51

Coneise, relics of stone and bronze ages discovered at, 59

Confucius, commentary added to Chou Yi by, 108

Visit of, to Lao-tzu, 135

Book of Poetry said to have been edited by, 211

Qualities of jade described by, 251 (*note* 6)

Congrès International des Américanistes, 96

Conquest, Spanish. See Spanish Conquest

Constance, excavations carried on for curator of Rosgarten Museum at, 66

Name *rhodo-nephrite* first applied by curator of Rosgarten Museum at, 67

Constance, Lake. See Lake Constance

Copper Age, Mexico and Guatemala in, when America was discovered, 96

Corcellettes, relics of stone and bronze ages discovered at, 59

Cortailod, relics of bronze age discovered at, 59

Corundum, lustre seen on cleavage of, 4

Crab (*P'ang-hsieh*), nephrite, Ming dynasty, China, 126

Credner, theory of Fischer vigorously and successfully opposed on geological grounds by, 46

Crete, prehistoric jade weapons and implements found among ruins of neolithic settlements in, 116

Crystallization, monoclinic system of, 17

Cup, horn-shaped (*Chüeh Pei*), nephrite, dating from Tang dynasty in China, 110

Lotus-leaf (*Ho-yeh Pei*), nephrite, dating from Tang dynasty in China, 110

(*Pei*), jadeite-quartzite, referred to Ming dynasty in China, 122

Cups, pair of jadeite (*Ch'a Kang*), Ming dynasty, China, 120

And Saucers, pair of jadeite, reign of K'ang-hsi, China, 143

With covers (*Kai Ch'a Wan*), jadeite, Ch'ien-lung, Chia-ch'ing to Kuang-hsi, China, 161, 240

With covers (*Kai Wan*), jadeite and nephrite, reign of Ch'ien-lung, China, 163, 177, 205, 206

Pair of nephrite (*Ch'a Wan*), reign of Ch'ien-lung, China, 192, 193

Cyclades, two analyses of glaucophane from, 59

Cylinder, small jadeite, probably from Burma and cut in China, 8

Dagger, nephrite, with silver-inlaid handle, eighteenth century, India, 258

Dagger-handle, nephrite, inlaid with silver, eighteenth century, India, 258

Dagger-handles, jewelled nephrite, seventeenth century, India, 253, 254, 256

Damour, Prof. A. A., string of several dozen jadeite beads obtained by, 15

Examination and study of jade specimens by, 15

Term *jade* found by, to denote two distinct minerals, 15

Jadeite distinguished from nephrite and named by, 15

Jadeite beads presented to Collection by, 15

Small square slab of jadeite presented to Collection by, 16

Jadeite, with results of analyses, received by Cohen from, 16

Small thin slab of very dark jadeite presented to Collection by, 18

Source of jadeite slab given to George Frederick Kunz by, 18

Small chloromelanite hatchet presented to Collection by, 57

Dana, Prof. J. D., two analyses of glaucophane from work by, 59

David, celebrated French sculptor, jadeite bust of Napoleon III made after model by, 16

Dawson, chief town of Yukon district and centre of Klondike mining industry, 49

De Fellenberg. See Fellenberg

Deity of Longevity (Shou Lao), nephrite figure of, reign of K'ang-hsi, China, 152

Jadeite and nephrite figures of, reign of Ch'ien-lung, China, 162, 213, 214

Delhi, immense booty of artistic treasures removed from, 115

Dellach, small thick jadeite hatchet found on slope of hill above, 94

Del Rio, Prof., jadeite ceremonial celt presented to Humboldt in Mexico by, 96

Denmark, jade implements said to have been found in, 55, 91

Diabantite, soft unctuous black chlorite-like substance resembling, 15

Diaspore, jadeite crystals compared with those in, 10

Reflections from crystalline cleavage of jadeite resembling, 11

Bright reflections of jadeite crystals resembling those from, 11

Small, stout, and brilliant crystalline reflections of jadeite, as in, 11

Translucent jadeite showing coarse brilliant crystals resembling, 12

Jadeite material showing bright reflections almost like those of, 12



- Dimensions of Specimen. *See* Summary preceding Description of Specimen
- Diomed Island, broken nephrite adze, exhibiting original fractured surface, from, 80
- Diopside, few, very isolated, prisms of colorless augite or, 42
- Dynamic metamorphism in prisms of, 43
- Dish (*P'ai-tsü*), nephrite, reign of Ch'ien-lung, China, 234
- Dish, oval (*Hsi-tsü*), of jadeite, Ming dynasty, China, 120
- (*Hsi-tsü*), large nephrite, Ming dynasty, China, 127, 128
- (*Hsi-tsü*), deep flat-bottomed nephrite, Ming dynasty, China, 134
- Double-gourd (*Hu-lu Hsi*), of nephrite, reign of K'ang hsi, China, 145
- Small circular (*Tieh-tsü*), of jadeite, reign of Ch'ien-lung, China, 161
- Of chrysanthemum pattern (*Ta Chü Hua P'an*), large round jadeite, 164
- Saucer-shaped (*P'an-tsü*), of jadeite, reign of Ch'ien-lung, China, 170
- Or Bowl, artist's (*Pi Hsi*), of jadeite, reign of Ch'ien-lung, China, 170
- Miniature (*Hsiao Tieh-tsü*), of jadeite, reign of Ch'ien-lung, China, 172
- Artist's (*Pi Hsi*), of nephrite, reign of Ch'ien-lung, China, 191
- Large round (*Ta P'an*), of nephrite, reign of Ch'ien-lung, China, 210, 211
- (*P'en*), small nephrite, reign of Ch'ien-lung, China, 236
- Of artificial plants (*P'en Ching*), nephrite, reign of Ch'ien-lung, China, 246
- Nephrite, period of Jehanghir or early Shah Jehan, 256
- Dishes (*P'an*), nephrite, Ming dynasty and Ch'ien-lung, China, 138, 210
- Lotus-leaf (*Hsio-eh Hsi-tsü*), of nephrite, reign of K'ang-hsi, China, 155, 157
- (*Hsi-tsü*), nephrite, reign of Ch'ien-lung, China, 190, 191, 218
- Small round (*P'an-tsü*), of nephrite, reign of Ch'ien-lung, China, 206, 213, 217, 233, 234
- With plants (*P'en Ching*), pair of nephrite, reign of Ch'ien-lung, China, 246
- Of fruit (*Kuo P'an*), pair of jadeite, reign of Chia-ch'ing, China, 247
- Nephrite, seventeenth century, India, 249, 251
- Divinity, Taoist. *See* Taoist Divinity
- Divinity of Longevity. *See* Deity of Longevity
- Dove (*Ko-tsü*), nephrite, Ming dynasty, China, 138
- Dragon with Young (*Ch'ih Lung Hsin Tsü*), nephrite, reign of Ch'ien-lung, China, 201
- Drawings. *See* Illustrations
- Dresden, jadeite specimen presented to Collection by Dr. Meyer of, 7
- Small jadeite cylinder obtained from, 8
- Rough fragment of nephrite procured from, 24
- Part of nephrite boulder from, 34
- Small fragment of Siberian nephrite from, 35
- Thin slab of Siberian nephrite from, 38
- Cross-section of nephrite boulder from, 41
- Section of crude nephrite block from, 45
- Small thin slab of nephrite from, 52
- Rare variety of jade hatchet from, 61
- Chisel-shaped jadeite hatchet in, 94
- Dresden Museum, small aboriginal jade celt or hatchet in, 55, 95
- Drilling, Oriental form of, 15
- Nephrite pebbles perforated for suspension by, 21
- Düben, fragment of nephrite block found in peat-bog of Schwemsal near, 46
- Duck (*Ya-tsü*), nephrite, reign of K'ang-hsi, China, 154
- Dutch Expedition of 1858, 55, 95
- Ear-drop (*Kuru*), arrested attempt to cut, from nephrite mass, 56, 97
- (*Kuru*), of beautifully translucent and very compact New Zealand nephrite, 267
- See also* Pendants
- Ear-ornament, prehistoric Mexican jadeite, 99
- Eastern Pamirs, fragment of water-worn weathered nephrite boulder from, 24
- Eastern Siberia, jade adze and chisel from, 54
- Aboriginal implements set in bone handles by natives of, 80
- Nephrite chisel, of rounded pentagonal form and short dull cutting edge, from, 86
- Eastern Turkistan, eighteen small nephrite pebbles from rivers of, 18, 19
- Three small nephrite pebbles from, 19
- Small nephrite fragment brought from, 20
- Twenty-one nephrite pebbles from rivers of, 20, 21
- Twenty-one nephrite pebbles of diverse coloring from river-beds of, 21, 22
- Eastern Turkistan—continued
- Section of crude nephrite mass from, 23
- Section of water-worn boulder of translucent nephrite from, 23
- Section of water-worn boulder from one of the jade-rivers of, 23
- Fragment of large nephrite block quarried in, 24
- Cuboidal section of water-worn nephrite pebble said to have come from, 25
- Small water-worn nephrite pebble from, 25
- Part of nephrite boulder from, with naturally polished exterior, 25
- Portion of large water-worn nephrite boulder from, 26
- Section of good-sized water-worn nephrite boulder from some river of, 27
- East Switzerland, nephrite implements most commonly found in lakes of, 57
- Ebensee, discovery of prehistoric objects on, 57
- Edkins, Dr. Joseph, jadeite fragment purchased at Shanghai for Collection by, 10
- On meaning of phrases "Yunnan jade" and "Canton jade," 10
- On Burmese jade and jade-mines, 10
- Nephrite specimens obtained through, 29
- Nephrite specimen purchased in Shanghai by, for Collection, 29
- Eger, Dr. L., small slab of nephrite secured by Meyer from, 52
- Elephant (*Hsiang*), nephrite, Ming dynasty, China, 132
- Carrying vase (*T'o P'ing Hsiang*), nephrite, reign of K'ang-hsi, China, 146
- Carrying precious vase (*T'o Pao Ping Hsiang*), nephrite, Ch'ien-lung, China, 245
- Emery Hydraulic Testing-machine, jadeite specimen subjected to tensile test in, 5
- Compression and tensile tests in, 23
- Compression test of nephrite cube by Prof. Woolson in, 32
- Average ultimate strength of two nephrite cubes placed successively in, 40
- Impact tests conducted by Page in, 42
- Compression and tensile tests made by Woolson with New Zealand nephrite in, 51
- Emmons, Lieut. G. T., custom of T'linkit people described by, 54
- Alaskan jade harpoon-head obtained from, 54
- Large Alaskan nephrite ud-lö-man (axe) obtained from, 76
- Rough nephrite axe, with cutting edge partly natural and partly ground, from, 76
- Nephrite adze, with bone holder and handle, obtained from, 77
- Hoo-tar (Adze) obtained in Alaska by, 77
- Aboriginal nephrite adze procured from Eskimos at Port Clarence by, 78
- Small aboriginal nephrite adze obtained by, on Hotham Inlet, Alaska, 78
- Broken adze, probably of nephrite, obtained in Sitka, Alaska, by, 79
- Nephrite adze procured from T'linkit people of Alaska by, 80
- Nephrite chisel, with cutting edge at lower end, obtained from T'linkits by, 81
- On use of slate by Eskimos for their knives, 83
- Use of Alaskan nephrite harpoon-head described by, 85
- Nephrite hand-pestle brought from Alaska by, 85
- Nephrite axe procured from Tekuktelis by, 85
- Engravings. *See* Illustrations
- Epidote, titanite or, believed to be recognized in nephrites by Arzruni, 42
- Substance so called by H. Traube, 42
- Erfurt, Historical and Antiquarian Collection at, 92
- Érli Lao. *See* T'ai Kung
- Eskimos, aboriginal jade adze attributed to Alaskan, 54
- Jade knife-sharpener owned by wife of chief of Selawik tribe of, 54, 83
- Aboriginal nephrite adze procured by Lieut. Emmons at Port Clarence from, 78
- Essay on Jade (T'ang Jung-tso), 10, 26
- Estavayer, relics of stone and bronze ages discovered at, 59
- Estremadura, perforated chisel-shaped jade hatchet found near Mérida in, 55, 94
- Ethnological Museum at Berlin, human tooth inlaid with turquoise in, 56
- Ethnological Museum at Leipzig, 93, 94, 95
- Europe, theory of Fischer regarding Schwemsal block and others found in, 46
- Casts intended to illustrate history of jade in, 55
- Largest and most important prehistoric implements of jade found in, 55
- Classification of jade art objects from, 116
- European Museum, Casts from, 55, 90-96
- Exhibition of 1886, English Colonial, 116, 265
- Expedition, French. *See* French Expedition
- Expedition of 1858, Dutch, 55, 95
- Expedition of 1897, Jesup North Pacific, 47, 53, 73
- Exposition, Paris. *See* Paris Exposition
- Fa (posthumously known as Wu Wang), Chinese sovereign, 167
- Fang Chüeh (Chinese). *See* Vase
- Fang Hu (Chinese). *See* Vase
- Fang Ping (Chinese). *See* Vase
- Fang Ting Lu (Chinese). *See* Incense-burner
- Fang Yin (Chinese). *See* Seals
- Fan Wan (Chinese). *See* Bowls and Rice-bowls
- Fei-chi Ping (Chinese). *See* Vase
- Feldspar, double refraction and polysynthetic twinning of plagioclase, 5
- Formation of small areas of, 5
- Inclusions of pale, almost white, mineral resembling, 66
- Fellenberg, Prof. Edmund de, on early immigration and barter, 57
- Feng-huang (Chinese). *See* Phenix
- Ferrie Oxide, percentages of, in specimens, 4, 5, 7, 8, 12, 16, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 59, 60, 61, 62, 71, 74, 88, 91, 97, 98, 106, 109, 118
- Ferrous Oxide, percentages of, in specimens, 5, 7, 8, 12, 23, 24, 26, 27, 32, 33, 34, 40, 41, 43, 45, 48, 50, 51, 59, 60, 61, 62, 71, 74, 88, 91, 93, 97, 106, 109
- Figure, cast of small jadeite human, apparently man beyond middle age, 95
- Miniature (*Hsiao Hsiang*), of nephrite, Ming dynasty, China, 129
- Of philosopher (*Hsiang*), reign of K'ang-hsi, China, 158
- See also* Temple Figure
- Figures, Buddhist. *See* Buddhist Figures
- Figures, Interference. *See* Interference Figures
- Finger-ring (*Chih Huan*), jadeite, Chia-ch'ing to Kuang-hsi, 239
- Fischer, Prof. Heinrich, fragment of nephrite monolith of Tamerlane formerly in possession of, 26
- Theory of, regarding nephrite of monolith on Tamerlane's tomb, 26
- Supported to some extent by statement of T'ang Jung-tso, 26
- Theory of, regarding Schwemsal block and others, 46
- Chisel-shaped jadeite hatchet found in Spain, 94
- Humboldt Celt illustrated and described by, 96
- Fish-bowl (*Ta Yü Kang*), large nephrite, reign of Ch'ien-lung, China, 231, 232
- (*Yü Kang*), nephrite, reign of Chia-ch'ing, China, 235
- Fish Gong. *See* Gong
- "Five Old Ones," the, 196, 199
- Flower Receptacle (*Hua Ch'a*), nephrite, reign of Ch'ien-lung, China, 174
- Fo Hsiang (Chinese). *See* Buddha
- Foote, Dr. Harry W., analysis made by, reduced by Clarke, 5
- Chemical analysis of jadeite specimen by, 8
- Analysis of broken cylindrical core of jadeite by, 12
- Clarke's reduction of analysis of jadeite fragments by, 17
- Chemical analysis of section of nephrite block by, 23
- Analysis of large nephrite block by, with Clarke's reduction, 26
- Chemical analysis of section of nephrite boulder by, with Clarke's reduction, 27
- Analysis of specimen of Siberian nephrite by, calculated by Clarke, 40
- Chemical analysis of nephrite material by, with Clarke's reduction, 43
- Analysis of pure specimen of Alaskan nephrite by, 48
- Chemical analysis of material of jadeite hatchet by, 60
- Results of chemical analysis by, with reduction by Clarke, 74
- Förstermann, Dr., on jadeite amulet said to have been found in Mexico, 100
- Fo Tung (Chinese). *See* Buddhist Column
- France, jadeite block brought to, from which bust of Napoleon III was made, 16
- Large quantity of jadeite imported into, from Rangoon, 18
- Prehistoric jade implements from, 53
- Long prehistoric jadeite knife, with sharp straight edge and rounded sides, from, 68
- Long chloromelanite hatchet, of remarkably beautiful form, from, 68
- Short stumpy jadeite hatchet, with slightly crescent-shaped cutting edge, from, 68



France—continued

- Small jadeite hatchet, short and stumpy, with fairly good cutting edge, from, 68  
 Small flat chloromelanite hatchet, of very regular form, found at Alzonne in, 69  
 Short thick nephrite knife, smooth all over but not polished, from Alzonne in, 69  
 Prehistoric jadeite hatchet, with wide rounded cutting edge, found at Authon in, 69  
 Prehistoric jadeite hatchet, with rounded cutting edge, found at Puy-laurens in, 69  
 Small thick jadeite chisel, with rounded cutting edge, found at Bonnieux in, 69  
 Prehistoric jadeite hatchet, entirely hammered into shape, from St. Julian in, 70  
 Small jadeite hatchet, with slightly curved cutting edge, from St. Julian in, 70  
 Jadeite hatchet, with curved cutting edge and bulging faces, from St. Julian in, 70  
 Relatively long narrow jadeite hatchet found at St. Julian in, 70  
 War provoked by China with, 147  
 Jadeite statuette of Venus de Milo executed in, 264  
 Profile portrait of Heber Reginald Bishop executed upon nephrite in, 264  
 Round nephrite bonbonnière decorated by artists of, 265  
 Nephrite paper-knife executed in, 265  
 Nephrite scent-bottle made in, 265  
 Very finely polished nephrite armband made in, 265  
 Finely polished rectangular nephrite bar cut in, 266  
 Fraser River, nephrite pebble found on sand-hill between Thompson River and, 47  
 Freiburg, fragment of nephrite monolith formerly in possession of Prof. Fischer of, 26  
 French Expedition of 1860, return from China of, 15  
 Frenzel, specific gravity of nephrite pebbles determined by, 91  
 Results of chemical examination by, 93  
 Chemical analysis of small thick jadeite (?) hatchet by, 95  
*Fu* (Chinese). See *Axe*  
 Fu-hsi, legendary founder of Chinese polity, 108  
 Fu, Lu, Shou, Chinese star-gods of happiness, rank, and longevity, 153, 197, 214, 242

- Gangue, crystals formed in cavity free from, 17  
 Garnet, inclusions of reddish-brown minerals suggesting, 40  
 Jadeite chisel showing abundance of colorless, without distinct crystal outline, 63  
 Long prehistoric jadeite knife with small included crystals of, 68  
 Small jadeite hatchet with inclusions of dark mineral suggestive of, 68  
 Genii. See *Rishi*  
 Geological Survey, United States, 41  
 Geological Survey of India, 3, 10  
 Geology (Prestwich), 266  
 George III, King of England, jade sceptre sent by Ch'ien-lung to, 148  
 Germany, transfer of jade specimens to Dr. Max Bauer of Marburg in, 3  
 Jadeite fragment presented to Collection by Prof. Cohen of, 16  
 Mammoth nephrite block discovered by Mr. George F. Kunz near Jordansmühl in, 41, 42, 43  
 Chemical analysis made by Dr. Carl Busz of Münster in, 43  
 Fragment of nephrite block found in peat-bog of Schwemstal in, 46  
 Credner's theory as to transportation of nephrite block to, 46  
 Jade implements from various localities in, 55  
 Discovery of prehistoric objects in, 57  
 Gibbon, Edward, English historian, *T'ai Tsung* styled Augustus of the East by, 145  
 Girdle, imperial (*Huang Ch'iao Tai*), of jadeite, probably Ming dynasty, Annam, 261  
 Girdle-appendage (*Niu-tzu*), nephrite, about thirteenth century, from China, 111  
 Girdle-buckle (*Tai Kou*), nephrite, reign of Yung-ch'eng, China, 159  
 (*Kou-tzu*), jadeite, reign of Ch'ien-lung, China, 173  
 (*Tai Kou*), jadeite, reign of Chia-ch'ing or Tao-kuang, China, 237  
 Girdle-buckles (*Tai Kou*), nephrite, Ming dynasty, China, 125, 126  
 (*Tai Kou*), jadeite and nephrite, reign of Ch'ien-lung, China, 159, 180, 184, 237  
 Girdle-clasps (*Tai Kou*), jadeite, reign of Ch'ien-lung, China, 166, 168  
 Girdle-ornament (*P'ei*), nephrite, dating from Han dynasty in China, 109

- Girdle-plaque (*Tai Pan*), nephrite, reign of Ch'ien-lung, China, 181  
 Glaucochane, molecules of, 45  
 Two analyses of, from Lyra, one of the Cyclades, 59  
 Gold, nephrite block with remains of surface decoration in red lacquer and, 26  
 Golden Island, picturesque Buddhist retreat in Yangtze River, 228  
 Plundered by the Tai-ping rebels, 230  
 Gong (*Ch'ing*), large flat nephrite, from China, 107  
 Fish (*Yü Ch'ing*), of jadeite, reign of K'ang-hsi, China, 139  
 Hanging (*Ch'ing*), of jadeite, reign of K'ang-hsi, China, 143  
 Fish (*Yü Ch'ing*), of nephrite, reign of Ch'ien-lung, China, 234  
 Gourd, miniature double (*Hsiao Hu Lu*), of jadeite, reign of Ch'ien-lung, China, 172  
 Grand Ducal Museum at Oldenburg, 92  
 Grand Lama of Tibet, spiritual head of northern form of Buddhism, 202  
 Grant, Sir Hope, *Private Journals*, 227 (see also *note*)  
 Granulite, pyroxene found by Traube in nephrite between serpentine and, 42  
 Graphite, dark grayish-green of nephrite specimen due to included crystals of, 32  
 Gratz, two rolled pebbles of leek-green nephrite in Museum Joanneum at, 55, 90, 91  
 Nephrite pebble picked from gravel-heap at entrance of Lazareth-gasse in, 55  
 Great Bear, constellation, abode of Taoist divinity Yü Hwang (or Huang) Shang Ti, 107, 127, 211, 242  
 Great Britain, war provoked by China with, 147  
 Greece, famous statue of Venus found at Melos in, 264  
 Greenstone, on the Working of (Chapman), 87, 90  
 Greenwich, latitude and longitude of Gulbâshen from, 20  
 Gregorian Calendar, adoption of, by Japanese, 242  
 Greifswald, jadeite fragment presented to Collection by Prof. Cohen of, 16  
 Gritstone, aboriginal, used to cut grooves in nephrite, found at Lytton, British Columbia, 73  
 Grünwedel, Prof., Buddhist Art in India, 174 (*note* 1)  
 Guadalajara, human teeth inlaid with jadeite found in grave near, 56, 101  
 Guatemala, prehistoric or pre-Columbian jade implements from, 53  
 Ancient worked fragment of jadeite from, 55, 96  
 Existence of crude jadeite in pre-Columbian period in, 56, 96  
 Use of cylindrical drill known to aborigines of, 56, 96  
 Two prehistoric jadeite pendants discovered on Mount Tacana in, 56, 97, 98  
 Small jadeite hatchet, with slightly curved cutting edge in perfect condition, from, 71  
 Part of prehistoric jadeite hatchet from, 72  
 Jadeite chisel, with thick body, wide cutting edge, and smoothed faces, from, 72  
 Jadeite knife, with flat top, straight sides, and blunt edge, found in, 72  
 Copper age reached by, previous to discovery of America, 96  
 Guerrero, jadeite amulet said to have been found in state of, 56, 100  
 Long tubular bead, wrought in greenish-gray jadeite, from, 56, 99  
 Guide to the Antiquities of the Stone Age, 102  
 Guinea, New. See *New Guinea*  
 Gulbâshen, nephrite fragment brought by Schlagintweit from jade-quarries near, 20  
 Gur-Emir Mosque, great nephrite monolith on tomb of Tamerlane in, 26  
 Gya-lung, Emperor of Annam, gold box engraved with inscription composed by, 116  
 Jadeite screen referred to reign of, 261-263

- Halloek, Prof., sonorosity of nephrite dish tested by, 210  
 Hand-pestle, nephrite, of triangular cross-section, 85  
 Hand-rests, writers' (*Nuan Shou*), of nephrite, Ming dynasty, China, 125, 136  
 Han Dynasty, China, nephrite objects referred to, 108-110, 117  
 Han Hsiang-tzu, Taoist divinity, 161, 163  
 Han Yü (Chinese), or Tomb Jades, 102-113  
 Han Yü, Chinese statesman, philosopher, and poet, 232 (see also *note* 4)  
 Hardness of Specimen. See *Summary* preceding  
 Description of Specimen  
 Harpoon-head, nephrite, set in shank of walrus-bone, 85

- Harras, flat jadeite hatchet found on Bonifacius Mountain near, 92  
 Harvard University, human teeth encrusted with jadeite in Peabody Museum at, 56, 101  
 Harvard University, prehistoric Mexican jadeite ear-ornament in Peabody Museum at, 99  
 Hatchet, naturally shaped nephrite, of graceful outline, 22  
 Small irregularly shaped jadeite, set in short deer-horn handle, 56  
 Short stout chloromelanite, with sharp crescent-shaped cutting edge, 57  
 Small chloromelanite, with broad cutting edge, 57  
 Jadeite-nephrite-zoisite, with holder, from Lake Neuchâtel, Switzerland, 58  
 Structure of jadeite-nephrite-zoisite, when studied microscopically in thin sections, 58  
 Small jadeite, found among remains of ancient pile-dwellings near Yverdon, 59  
 Prehistoric jadeite, found among remains of pile-dwellings of Lake Neuchâtel, Switzerland, 59  
 Small flat jadeite, with straight cutting edge and narrow top, 59  
 Jadeite, with sharp, somewhat crescent-shaped cutting edge, 60  
 Jadeite, with slightly curved faces and flat sides, 60  
 Small flat chloromelanite, found among remains of ancient Swiss pile-dwellings, 60  
 Wedge-shaped nephrite, broken at upper end, from Lake Neuchâtel, Switzerland, 61  
 Nephrite, found among piles of ancient lake-dwellings of Switzerland, 61  
 Small nephrite, of good outline and smoothed all over, 61  
 Nephrite, of usual form, narrow at top and wide at cutting edge, 61  
 Nephrite, with smooth flat faces and stained sides, 62  
 Small thick broken nephrite, with saw-marks on both sides, 62  
 Part of small thin flat nephrite, with sharp regular cutting edge, 63  
 Prehistoric nephrite, found among remains of ancient pile-dwellings on Lake Constance, 66  
 Prehistoric nephrite, from site of ancient pile-dwelling on Lake Constance, 66  
 Long jadeite, found among ruins of ancient lake-dwellings on Lake Constance, 66  
 Broken nephrite, with straight sides and sharp curved cutting edge, 67  
 Jadeite, found among remains of ancient pile-dwellings near Wallhausen, Lake Constance, 67  
 Prehistoric chloromelanite, of remarkably beautiful form, from Brittany, France, 68  
 Short stumpy jadeite, with slightly crescent-shaped cutting edge, from Alzonne, France, 68  
 Small jadeite, short and stumpy, with fairly good cutting edge, 68  
 Small flat chloromelanite, of very regular form, found at Alzonne, France, 69  
 Prehistoric jadeite, with wide rounded cutting edge, found at Authon, France, 69  
 Prehistoric jadeite, with rounded cutting edge, from Puy-laurens, France, 69  
 Prehistoric jadeite, entirely hammered into shape, from St. Julian, France, 70  
 Small jadeite, with slightly curved cutting edge, from St. Julian, France, 70  
 Small thick jadeite, with slightly curved cutting edge and bulging faces, 70  
 Relatively long narrow jadeite, from St. Julian, Haute-Garonne, France, 70  
 Small jadeite, with slightly curved cutting edge in perfect condition, from Guatemala, 71  
 Part of prehistoric jadeite, from Guatemala, 72  
 Prehistoric jadeite, of perfect outline and fine finish, from Jamaica, West Indies, 72  
 Jadeite, of rounded section, with curved faces, probably from West Indies, 72  
 Long narrow nephrite, found in grave at east end of Noeola Lake, 73  
 Small flat nephrite, with straight cutting edge and rounded sides, 74  
 Nephrite, with slightly curved cutting edge formed by grinding from both faces, 74  
 Nephrite, tapering to head, which is much broken, from British Columbia, 74  
 Nephrite, probably of Tlinkit origin, from Bering Sea coast of Alaska, 80  
 Thick nephrite, with wide straight cutting edge, from Kotzebue Sound, Alaska, 80  
 Fragment of nephrite, from Sledge Island, Alaska, 80  
 Nephrite, ground smooth on one face and on lower part of other, 86  
 Small nephrite, of regular outline, with crescent-shaped cutting edge, 87  
 Two longitudinal sections of nephrite, illustrating methods of prehistoric lapidary, 87



Hatchet—*continued*

- Nephrite, with convex sides tapering upward to irregularly rounded point, 88  
(*Yao-chan*), flat nephrite, smoothed all over, with straight cutting edge, 89
- Hatchet—The following, to end, are Casts:  
Flat jadeite, with one face more curving than the other, 91  
Long flat jadeite, with sharp crescent-shaped cutting edge, 91  
Large flat chloromelanite, 92  
Small flat chloromelanite, with slightly curved cutting edge, 92  
Flat jadeite (?), with blunt curved cutting edge, 92  
Long flat chloromelanite, with slightly curving faces and blunt sides, 92  
Long narrow, relatively thick, unsymmetrical jadeite (?), 93  
Flat jadeite, with wide, moderately curved cutting edge, 93  
Long flat jadeite, with curved cutting edge and flattish faces, 93  
Thin flat jadeite (?), with wide curved cutting edge, 93  
Long flat jadeite, with slightly curving faces, 94  
Small thick jadeite, with crescent-shaped cutting edge, 94  
Chisel-shaped jadeite, with sharp spreading cutting edge, 94  
Thick jadeite, with crescent-shaped cutting edge and rounded sides, 94  
Long nephrite, with flat faces and curved cutting edge, 95  
Small thick jadeite (?), with tapering round head, 95
- Haute-Garonne, prehistoric jadeite hatchet, entirely hammered into shape, from St. Julian in, 70  
Small jadeite hatchet, with slightly curved cutting edge, from St. Julian in, 70  
Jadeite hatchet, with curved cutting edge and bulging faces, from St. Julian in, 70  
Relatively long narrow jadeite hatchet found at St. Julian in, 70
- Heard, Albert, artist's jade brush-holder presented by Col. Schmidt to, 223
- Heaven, Temple of. *See* Temple of Heaven
- Hedin, Dr. Svén, famous Swedish traveller, three small nephrite pebbles found by, 19  
Yüfängkash River forded by, 19
- Heitiki* (Maori). *See* Neck-ornament and Pendant
- Hematite, incrustation of, 18  
Surface of nephrite block altered to dead-oak-leaf color by, 31  
Pyrite or pyrrhotite partly altered to, 34
- Hermits. *See* Rishi.
- Hertz, Dr. Walter, two analyses of nephrite material made by, 43
- Hessen, transfer of jade specimens to Dr. Max Bauer of Marburg in, 3
- Himalayas, fragment of jadeite specimen from northern, 18
- Histoire de la Vie de Hiouan-Tsang et de ses Voyages dans l'Inde, 145
- Historical and Antiquarian Collection at Erfurt, 92  
Historical and Antiquarian Society at Münster, 92  
Ho-ho òrh Hsien, two merry genii of Chinese fable, 148  
Ho Hsien-ku, Taoist divinity, 161, 163  
*Ho-huan Pei* (Chinese). *See* Wine-cup
- Ho-nan, section of rough water-worn nephrite boulder said to be from, 29  
Section of much weathered nephrite mass said to be from, 30  
Fragment of mass of compact and homogeneous nephrite said to come from, 30  
Rough nephrite pebble said to come from province of, 30  
Thick nephrite disc said to be derived from province of, 30  
Cut section of nephrite block said to have come from province of, 31  
Crude nephrite not known to occur *in situ* in province of, 31  
Outer slab of nephrite boulder said to have been found in, 31  
Long flattish nephrite boulder said to have been found in river-bed of, 31
- Hoo-tar (Adze), obtained by Lieut. G. T. Emmons in Alaska, 77  
Broken, probably of nephrite, much altered by action of heat, 79
- Horse, lying down (*Wo Ma*), of nephrite, reign of K'ang-hsi, China, 144  
Carrying bundle of books (*To Shu Ma*), nephrite, Ch'ien-lung, China, 245
- Hotham Inlet, small aboriginal nephrite adze from, 78

Höxter, long flat jadeite hatchet found near Wehrden Chapel in, 93

- Ho-yeh Hsi-tzu* (Chinese). *See* Dishes  
*Ho-yeh Pei* (Chinese). *See* Cup  
*Ho-yeh Ping* (Chinese). *See* Vase  
*Hsiang* (Chinese). *See* Elephant and Figure  
*Hsiang K'ou-tai* (Chinese). *See* Perfume-receptacles  
*Hsiang Lu* (Chinese). *See* Incense-burner and Incense-burners  
*Hsiao Chan* (Chinese). *See* Celt  
*Hsiao Fang Ping* (Chinese). *See* Vase  
*Hsiao Hsiang* (Chinese). *See* Figure  
*Hsiao Hua Ku* (Chinese). *See* Vase  
*Hsiao Hua Ping* (Chinese). *See* Vase  
*Hsiao Hu Lu* (Chinese). *See* Gourd  
*Hsiao Kuan* (Chinese). *See* Jars  
*Hsiao Tieh-tzu* (Chinese). *See* Dish  
*Hsiao Tsun* (Chinese). *See* Beaker and Vase  
*Hsiao Tung* (Chinese). *See* Brush-holder  
*Hsi-tzu* (Chinese). *See* Bowl with Handles, Dish, Dishes, Tray, Water-dish, Water-holder, and Water-receptacle
- Hsi Wang Mu, Chinese fairy queen, 126, 137, 149, 198  
Nephrite figure of, reign of Ch'ien-lung, China, 203, 204  
*Hua Ch'a* (Chinese). *See* Flower Receptacle and Vases  
*Hua Chan* (Chinese). *See* Celt  
Huai Nan Tzu, Chinese Taoist philosopher, 104 (*note*), 156  
*Hua Ku* (Chinese). *See* Beaker and Vases  
*Huang Ch'ao Tai* (Chinese). *See* Girdle  
Huang Ssu, temple of, with marble bas-reliefs of life of Buddha, 173 (*note*)  
Huang Tzu-chin, celebrated Chinese landscape-painter, 186 (*see also note* 1)  
*Huang Yu Tao* (Chinese). *See* Knives  
*Hua Ping* (Chinese). *See* Vase and Vases  
Hué, jade objects from palace of old emperors of Annam at, 116, 261  
*Hu-lu Hsi* (Chinese). *See* Dish  
*Hu Lu Ping* (Chinese). *See* Vase  
*Hu-lu Yen-tai* (Chinese). *See* Pallet  
Humboldt, Alexander von, jadeite ceremonial celt presented in Mexico to, 96  
Humboldt Celt, east of, from original in Ethnological Department of Berlin Museum, 55, 96  
Humboldt's Bay, small aboriginal jade celt or hatchet brought from, 55, 95  
Hu-nan, four nephrite pebbles said to have been found in river of, 29  
Hungary, fragment of jadeite specimen cut from axe found in, 47  
Huon Gulf, aboriginal jade celts and similar specimens from shore of, 54, 55, 88  
*Hu-t'ieh* (Chinese). *See* Butterfly  
Hu Ying-ling, Chinese writer of Ming dynasty, 193  
Hwang-ti, Chinese emperor, 242

Iddings, Prof., result of examination of specimens with microscope by, 9

- Coarse-grained jadeite specimen examined microscopically by, 14  
Material found to be almost pure jadeite when examined microscopically by, 17  
Gray and brown sections studied microscopically by, 22  
Report of, after microscopical study of two sections of nephrite pebble, 22  
Microsections of rough mass of Siberian nephrite studied by, 40  
Study of fragment of huge nephrite block with microscope by, 41  
Report of, on two microsections of nephrite examined by him, 43  
Microscopical examination of thin nephrite sections by, 46  
Thin sections of Schwemsa block examined microscopically by, 46  
Opinion of, on constitution of hatchet from pile-dwellings of Switzerland, 58  
Two sections of small Mexican jadeite mask examined microscopically by, 98  
Two sections of Chinese nephrite libation-cup studied microscopically by, 108
- Ilehi, Dr. Svén Hedin's excursion from, to Kaltakumat, 19
- Illustrated Descriptions of Ancient Jade, 103 (*note*), 189
- Illustrations  
Somewhat long flattish nephrite boulder perhaps from Karakash River in Turkistan, 31  
Cross-section of nephrite boulder from Wilna River, Siberia, 41

Illustrations—*continued*

- Cross-section of irregularly shaped boulder of New Zealand nephrite, 50  
Small irregularly shaped jadeite hatchet, set in short deer-horn handle, 57  
Thick flat jadeite-nephrite-zoisite hatchet with holder, 58  
Prehistoric jadeite hatchet found among remains of ancient pile-dwellings in Switzerland, 59  
Small flat jadeite hatchet with straight cutting edge and narrow top, 59  
Small flat chloromelanite hatchet found in remains of pile-dwellings in Switzerland, 60  
Small thick broken nephrite hatchet with saw-marks on both sides, 62  
Part of small thin flat chloromelanite hatchet with sharp regular cutting edge, 63  
Small thick nephrite chisel found among remains of pile-dwellings in Switzerland, 63  
Prehistoric nephrite knife found in pile-dwelling remains of Lake Neuchâtel, 64  
Tiny nephrite knife found among remains of ancient pile-dwellings in Switzerland, 64  
Prehistoric nephrite knife with cutting edge ground away at one side, 65  
Long prehistoric jadeite knife with sharp straight edge and rounded sides, 68  
Long thick narrow jadeite axe found in Mexico, 71  
Small jadeite hatchet, with curved cutting edge in perfect condition, from Guatemala, 71  
Jadeite chisel, with thick body, wide cutting edge, and smoothed faces, from Guatemala, 72  
Prehistoric jadeite hatchet, of perfect outline and fine finish, from Jamaica, 72  
Manner of holding gritstone used to cut grooves in nephrite, 73  
Rough nephrite axe, with undefined cutting edge at each end, from Alaska, 76  
Nephrite adze inserted in bone holder to which bone handle is lashed, 77  
Large nephrite adze fractured from boulder and ground flat on each face, 77  
Aboriginal nephrite adze set in roughly shaped walrus-bone handle, 78  
Nephrite adze procured by Lieut. Emmons from Tlinkit people of Alaska, 80  
Nephrite hatchet from Bering Sea coast of Alaska, assigned to Tlinkits, 80  
Nephrite chisel, with good cutting edge at lower end, produced by grinding, 81  
Nephrite knife used for domestic purposes by native women of Alaska, 81  
Long thin-bladed nephrite knife set in thick holder of wood, 82  
Nephrite scraper mounted in handle intended to be held in right hand, 84  
Nephrite hand-pestle, of triangular cross-section, from northwest coast of Alaska, 85  
Two sections of hatchet showing aboriginal methods of sawing and fracturing jade, 87  
Large partly worked piece of spinach-green nephrite, 97  
Three human teeth inlaid with pea-green jadeite, 101  
Pierced medallion of nephrite from China, 105  
Large flat nephrite Chinese gong, 107  
Chinese armlet of nephrite, Han dynasty, 108  
Lotus-leaf nephrite cup, Tang dynasty, China, 110  
Lotus-leaf nephrite vase, about thirteenth century, China, 111  
Nephrite wine-pot, early Ming dynasty, China, 111  
Nephrite sacrificial vessel, period unknown, China, 112  
Nephrite signets, period unknown, China, 112  
Jadeite curved bead used, with tubular bead, in early times in Japan, 113  
Nephrite bells, Han dynasty and Ch'ien-lung, China, 117, 209  
Water-receptacle of jadeite, Ming dynasty, China, 119  
Jadeite oval dish, Ming dynasty, China, 120  
Jadeite plum-tree vase, Ming dynasty, China, 121  
Jadeite gourd-shaped vase, Ming dynasty, China, 121  
Nephrite water-dishes, Ming dynasty and Ch'ien-lung, China, 123, 212  
Nephrite bowl with two dragon-handles, Ming dynasty, China, 123  
Nephrite double-cylinder vases, Ming and Ch'ien-lung, China, 124, 198  
Pair of nephrite peaches, Ming dynasty, China, 126  
Nephrite screen, Ming dynasty, China, 126  
Small nephrite screen, Ming dynasty, China, 127  
Large nephrite dish, Ming dynasty, China, 127  
Large and small nephrite lions, Ming dynasty, China, 128  
Nephrite water-receptacles, Ming dynasty, China, 128, 135  
Nephrite miniature loving-cup, Ming dynasty, China, 129  
Nephrite pen-rest, Ming dynasty, China, 130



Illustrations—*continued*

- Ornamental knobs of nephrite, Ming dynasty, China, 130, 131  
 Nephrite incense-burner, Ming dynasty, China, 131  
 Flower vase of nephrite, Ming dynasty, China, 132  
 Nephrite paper-weight, Ming dynasty, China, 132  
 Grotesque nephrite monster with vase, Ming dynasty, China, 133  
 Miniature flower vase of nephrite, Ming dynasty, China, 133  
 Nephrite wine-cup, Ming dynasty, China, 133  
 Jade chains, Ming dynasty, China, 134  
 Writer's hand-rest of nephrite, Ming dynasty, China, 136  
 Double flower vase of nephrite, Ming dynasty, China, 137  
 Temple figure of nephrite, Ming dynasty, China, 137  
 Nephrite dove, Ming dynasty, China, 138  
 Jadeite fish gong, reign of K'ang-hsi, China, 139  
 Double-gourd pallet of jadeite, reign of K'ang-hsi, China, 140  
 Baby pillow of jadeite, reign of K'ang-hsi, China, 141  
 Covered bowl of jadeite, reign of K'ang-hsi, China, 141  
 Jadeite and nephrite snuff-bottles, reigns of K'ang-hsi and Ch'ien-lung, China, 142, 214  
 Jadeite quadrangular vase, reign of K'ang-hsi, China, 142  
 Artist's jadeite water-holder, reign of K'ang-hsi, China, 143  
 Double-dragon vase of nephrite, reign of K'ang-hsi, China, 143  
 Water-buffalo carved in nephrite, reign of K'ang-hsi, China, 144  
 Beaker-shaped vases of nephrite, reigns of K'ang-hsi and Ch'ien-lung, China, 144, 194  
 Nephrite double-gourd dish, reign of K'ang-hsi, China, 145  
 Nephrite flower vase, reign of K'ang-hsi, China, 145  
 Nephrite double-phenix vase, reign of K'ang-hsi, China, 146  
 Nephrite elephant carrying vase, reign of K'ang-hsi, China, 146  
 Flat nephrite beaker, reign of K'ang-hsi, China, 147  
 Nephrite sceptre, reign of K'ang-hsi, China, 147  
 Jade ju-i, or Chinese sceptre, 148  
 Hexagonal beaker of nephrite, reign of K'ang-hsi, China, 148  
 Nephrite beaker-shaped vase, reign of K'ang-hsi, China, 148  
 Lotus vase of nephrite, reign of K'ang-hsi, China, 149  
 Artist's water-holder of nephrite, reign of K'ang-hsi, China, 150  
 Pair of nephrite bowls, reign of K'ang-hsi, China, 150  
 Nephrite incense-burners, reigns of K'ang-hsi and Ch'ien-lung, China, 151, 216  
 Artist's water-holder of nephrite, reign of K'ang-hsi, China, 151  
 Flower vase of nephrite, reign of K'ang-hsi, China, 152  
 Nephrite figure of Shou Lao, reign of K'ang-hsi, China, 152  
 Archaic libation-cup of nephrite, reign of K'ang-hsi, China, 153  
 Double fish-dragon vase of nephrite, reign of K'ang-hsi, China, 153  
 Nephrite image of Sakyamuni Buddha, reign of K'ang-hsi, China, 154  
 Nephrite figure of duck, reign of K'ang-hsi, China, 154  
 Double-dragon seal of nephrite, reign of K'ang-hsi, China, 155  
 Seal casket of nephrite, reign of K'ang-hsi, China, 156  
 Nephrite mountain scene, reign of K'ang-hsi, China, 156  
 Lotus-leaf dish modelled in nephrite, reign of K'ang-hsi, China, 157  
 Nephrite round screen, reign of K'ang-hsi, China, 157  
 Jadeite oval vase with cover, reign of Yung-ch'eng, China, 158  
 Nephrite girdle-buckle, reign of Yung-ch'eng, China, 159  
 Nephrite water-jar, reign of Yung-ch'eng, China, 159  
 Jadeite and nephrite cups with covers, reign of Ch'ien-lung, China, 161, 163, 177, 206  
 Small jadeite statuette of Shou Lao, Taoist god of long life, 162  
 Jadeite bowls, reign of Ch'ien-lung, China, 162, 165  
 Jadeite sceptres, reign of Ch'ien-lung, China, 164, 172  
 Chinese seal, reign of Ch'ien-lung, China, 164  
 Jadeite vase, reign of Ch'ien-lung, China, 165  
 Jadeite and nephrite altar sets, reign of Ch'ien-lung, China, 166, 176, 178, 179, 192  
 Jadeite and nephrite snuff-bottles, reign of Ch'ien-lung, China, 167, 214  
 Small jadeite comb, reign of Ch'ien-lung, China, 167  
 Jadeite and nephrite pendants, reign of Ch'ien-lung, China, 168, 181  
 Jadeite girdle-clasp, reign of Ch'ien-lung, China, 168  
 Jadeite plume-holder, reign of Ch'ien-lung, China, 169  
 Brush-holders of jadeite and nephrite, reign of Ch'ien-lung, China, 170, 197, 202, 225, 227, 245

Illustrations—*continued*

- Round screen of jadeite, reign of Ch'ien-lung, China, 171  
 Artist's jadeite water-dish, reign of Ch'ien-lung, China, 171  
 Taoist mountain scene carved in nephrite, reign of Ch'ien-lung, China, 175  
 Nephrite vases, reign of Ch'ien-lung, China, 175, 176, 189, 198, 219, 220  
 Magnolia vase modelled in nephrite, reign of Ch'ien-lung, China, 177  
 Nephrite paper-weights, reign of Ch'ien-lung, China, 178, 184, 215  
 Nephrite incense-burners with covers, reigns of Ch'ien-lung and Chia-ch'ing, China, 179, 190, 235  
 Ornamental plaque of nephrite, reign of Ch'ien-lung, China, 180  
 Nephrite lion and cub, reign of Ch'ien-lung, China, 180  
 Nephrite girdle-plaque, reign of Ch'ien-lung, China, 181  
 Ornament of nephrite, reign of Ch'ien-lung, China, 184  
 Amulet of nephrite, reign of Ch'ien-lung, China, 185  
 Nephrite screens, reign of Ch'ien-lung, China, 185, 188, 200, 208, 224, 229, 230  
 Imperial poetic description, within border, engraved on reverse side of screen, 186  
 Nephrite flower vases, reign of Ch'ien-lung, China, 187, 189  
 Round bowl and cover of nephrite, reign of Ch'ien-lung, China, 187  
 Nephrite vases with covers, reign of Ch'ien-lung, China, 187, 195, 201, 207, 216, 217  
 Nephrite bowl with cover, reign of Ch'ien-lung, China, 188  
 Nephrite water-receptacles, reign of Ch'ien-lung, China, 189, 201  
 Nephrite wine-pitcher, reign of Ch'ien-lung, China, 190  
 Dishes carved in nephrite, reign of Ch'ien-lung, China, 191, 218  
 Nephrite bowls with handles, reign of Ch'ien-lung, China, 192, 194, 221, 227, 228  
 Marriage wine-cup of nephrite, reign of Ch'ien-lung, China, 193  
 Nephrite pilgrim-bottles, reign of Ch'ien-lung, China, 195, 196, 220  
 Buddhist figures carved in nephrite, reign of Ch'ien-lung, China, 197, 209  
 Carved nephrite boulder, reign of Ch'ien-lung, China, 198  
 Taoist figure carved in nephrite, reign of Ch'ien-lung, China, 199  
 Small quadrangular vase of nephrite, reign of Ch'ien-lung, China, 200  
 Dragon with young carved in nephrite, reign of Ch'ien-lung, China, 201  
 Four Chinese characters in antique script, 202  
 Quadrangular vase of nephrite, reign of Ch'ien-lung, China, 203  
 Nephrite figure of Taoist divinity (Hsi Wang Mu), reign of Ch'ien-lung, China, 204  
 Jade frame with mirror, reign of Ch'ien-lung, China, 204  
 Nephrite incense-burners, reign of Ch'ien-lung, China, 205, 206, 218, 222  
 Nephrite perfume-receptacles, reign of Ch'ien-lung, China, 207  
 Ceremonial axe of nephrite, reign of Ch'ien-lung, China, 208  
 Inscription carved in bold Chinese characters of archaic style within ornamental border, 208  
 Chinese inscriptions beautifully engraved in minute characters, 209  
 Large round nephrite dish, reign of Ch'ien-lung, China, 210  
 Nephrite musical stone, reign of Ch'ien-lung, China, 211  
 Round box carved in nephrite, reign of Ch'ien-lung, China, 212  
 Carved nephrite figures of Longevity Mountain, reign of Ch'ien-lung, China, 216, 226  
 Nephrite incense-burner sets, reign of Ch'ien-lung, China, 221, 222  
 Sacrificial tripod carved in nephrite, reign of Ch'ien-lung, China, 224  
 Nephrite fish-bowls, reigns of Ch'ien-lung and Chia-ch'ing, China, 231, 235  
 Chinese inscription engraved on inside of large nephrite fish-bowl, 232  
 Chinese inscription in six old-style characters engraved on nephrite basin, 232  
 Large oval basin carved in nephrite, reign of Ch'ien-lung, China, 233  
 Chinese inscription of four characters in antique script on nephrite bowl, 234  
 Nephrite beaker of ancient bronze design, reign of Chia-ch'ing, China, 235  
 Large nephrite bowl with cover, Chia-ch'ing to Tao-kuang, 236  
 Twelve Chinese animals (or signs) of the zodiac, 242  
 Imperial jade-handled knives, reign of Ch'ien-lung, China, 244

Illustrations—*continued*

- Horse carrying bundle of books, carved in nephrite, reign of Ch'ien-lung, China, 245  
 Elephant carrying precious vase, carved in nephrite, reign of Ch'ien-lung, China, 245  
 Dishes of plants carved in nephrite, reign of Ch'ien-lung, China, 246  
 Nephrite bowls, seventeenth century, India, 248, 249, 250  
 Floral vase of nephrite, probably seventeenth century, India, 249  
 Nephrite ring-box, seventeenth century, India, 250  
 Chinese inscription on external surface of chrysanthemum bowl, seventeenth century, India, 250  
 Nephrite mirror-frame, seventeenth century, India, 251  
 Nephrite sword-guard, seventeenth century, India, 251  
 Dagger-handle of jewelled nephrite, seventeenth century, India, 254  
 Jewelled nephrite plate, seventeenth century, India, 254  
 Jar and cover of jewelled nephrite, seventeenth century, India, 254  
 Jewelled nephrite box, seventeenth century, India, 255  
 Mirror of jewelled nephrite, eighteenth century, India, 257  
 Jewelled nephrite armlet, eighteenth century, India, 257  
 Jewelled nephrite sceptre, eighteenth century, India, 257  
 Nephrite dagger-handle, inlaid with silver, eighteenth century, India, 258  
 Nephrite box and cover, inlaid with gold, eighteenth century, India, 258  
 Jewelled nephrite pendant, nineteenth century, India, 259  
 Thumb-ring of jewelled nephrite, nineteenth century, India, 259  
 Jewelled nephrite clasp, nineteenth century, India, 260  
 Jewelled nephrite vase, nineteenth century, India, 260  
 Jadeite screen, nineteenth century, Annam, 262  
 Nephrite water-horn, nineteenth century, Annam, 263  
 Nephrite ink-pallet, nineteenth century, Annam, 264  
 Jadeite statuette of Venus de Milo, 264  
 Round nephrite bonbonnière executed in Paris, 265  
 Paper-knife cut in nephrite by M. Bozzachi of Paris, 265  
 Nephrite pendant, nineteenth century, New Zealand, 267  
 Impact Tests, 5, 23, 27, 32, 40, 42, 51  
 Imperial Court Ministry, Permikin sent to Siberia in search of nephrite by, 40  
 Jacewski ordered by, to procure monolith for Alexander III's sarcophagus, 40  
 Imperial Lapidary at Peterhof, nephrite specimen obtained by Prof. Arzruni from, 35  
 Imperial Maritime Customs, Chinese, 10, 211 (*note*)  
 Imperial Museum of Natural History, Vienna, 47, 55, 95  
 Imperial School of Mines at St. Petersburg, 35  
 Implements, Jade, prehistoric and aboriginal, 53, 54, 56 *et seq.*  
 Incense-burner (*Hsiang Lu*), nephrite, Ming dynasty, China, 131  
 (*Ting*), tripod, with cover, carved in nephrite, Ming dynasty, China, 139  
 Quadrangular (*Fang Ting Lu*), of jadeite, reign of K'ang-hsi, China, 141  
 (*Tan Lu*), nephrite, reign of Ch'ien-lung, China, 222  
 Incense-burners (*Kai Wan Lu*), nephrite, K'ang-hsi and Ch'ien-lung, China, 151, 216  
 With covers (*Kai Lu*), nephrite, reigns of Ch'ien-lung and Chia-ch'ing, China, 179, 190, 235  
 (*Hsiang Lu*), nephrite, reign of Ch'ien-lung, China, 204, 205, 219  
 Tripod (*Ting Lu*), of nephrite, reign of Ch'ien-lung, China, 206, 207, 218, 219  
 Incense-burner sets (*Lu, Ho, P'ing*), nephrite, reign of Ch'ien-lung, China, 221, 222  
 Incidents of China War (Capt. Henry Knollys, R.A.), 124  
 India, part of worked piece of nephrite possibly from, 18  
 Color common in worked jades of, 18  
 Classification of worked jades of, 115, 116  
 Jade objects referred to different periods in, 248-260  
 India, Geological Survey of, 3, 10  
 Indian River, large nephrite pebble found in Sulphur Creek, a tributary of, 49  
 Indians, sharpeners used for steel blades by Alaskan, 83  
 Indians, Chimsian. *See* Chimsian Indians  
 Indies, West. *See* West Indies  
 Ink-jade (Chinese *Mo-yü*), a kind of nephrite, 27, 139, 160  
 Ink-pallet and Water-horn, nephrite, nineteenth century, Annam, 263, 264  
 Ink-rest (*Mo Chuang*), nephrite, reign of Ch'ien-lung, China, 160  
 Inscription, circular jadeite medallion with incised, 14  
 Broken oblong nephrite medallion with incised Chinese, 28



- Interference Figures, jadeite inclusions prevent obtaining of good, 17
- International Exposition of 1900, Paris, 116
- I-pik-sawn (Knife-sharpener), long nephrite, with slightly convex faces and rounded sides, 83
- Irgenhausen, discovery of prehistoric objects at, 57
- Irkutsk, rough nephrite fragment fractured out of boulder from Belaja River near, 34
- Iron, frosted appearance of galvanized, 4
- Crystals imparting to jadeite appearance of galvanized, 5
- Jadeite specimen resembling so-called "galvanized," 7
- Black metallic mineral which appears to be magnetic, 29
- Depressed fractures in nephrite boulder stained by oxidation of, 32
- Chloromelanite simply a variety of jadeite rich in, 60
- Iron, Chromic. *See* Chromic Iron
- Iron, Oxide of. *See* Oxide of Iron
- Iron Age, relics of, discovered in Yverdon district, Lake Neuchâtel, Switzerland, 59
- Iron Protioxide, percentage of, in specimen, 95
- Iron Pyrites, or Sulphide of Iron, distinct crystals of, 24
- Island, North. *See* North Island
- Itzamna, god of storm, manifestations or incarnations of, 100 (*note*)
- Jack, Dr. Logan, on jade-cutting and jade speculation in Momiën, 240
- Jacobsen, Capt., part of nephrite boulder brought from Belaja River by, 34
- Jaczewski, Prof. L. von, jade discovered *in situ* in Siberia by, 26, 35, 37
- Primary nephrite received from, 34
- Rough nephrite fragment taken from Onot River in Siberia by, 35
- Nephrite deposits described by, as forming tremendous beds, 35, 37
- Outer slab of weathered mass of translucent nephrite obtained from, 35
- Rough fragment of primary nephrite from great deposits discovered by, 36
- Sent in search of monolith for sarcophagus of Alexander III, 40
- Oblong fragment of Siberian nephrite presented to Collection by, 41
- Jade, specimens of crude, 3
- Microscopical examination and chemical analysis of, by Bauer, 3
- "Yunnan White," 9
- Material called by Mohammedan dealer "Yunnan," 10
- T'ang Jung-tso on Burma as true source of, 10
- T'ang Jung-tso explains how name of "Yunnan" came to be given to, 10
- Supplies of, from Burma through Yunnan, 10
- Origin of name "Canton" as applied to, 10
- Meaning of names "Yunnan" and "Canton" as applied to, 10
- Dr. Edkins on Burmese, 10
- Digging for, and export of, in Burma, 10
- Yunnan traders still go to mines of Burma for, 10
- Not known to occur *in situ* anywhere in Yunnan, 10
- Method used by jade-miners of Burma in quarrying, 11
- Valuable objects of, carried away from Summer Palace near Peking, 15
- Two distinct minerals covered by name, 15
- Capt. Younghusband on Tibet as source of, 17
- Occurrence of color in worked Indian and Chinese, 18
- Large supplies of, yielded by old bed of Yürüŋkâsh, 19
- Yürüŋkâsh specially noted for quality of boulders and pebbles of, 19
- Reliable information regarding occurrence of, in K'un Lun Mountains, 20
- Green variety of, from Manas in Sungaria, 26
- K'un Lun Mountains only definitely known source of, in Central Asia, 26
- Deep-green variety of, called by dealers Ma-na-ssü, 26
- Examples of possible occurrence of, *in situ* in China proper, 29
- China dependent on jade-mines or jade-rivers of Turkistan for, 29
- Localities of, mentioned in Chinese topographies, 29
- Chinese term *yü* includes stones in no way related to, 29
- May yet be found in place in China, 29
- Nephrite used by Chinese for numerous works of art in, 31
- Nephrite piece impossible of identification exteriorly as, 31
- Specimen of, called by Chinese lapidaries *Yun Pi Yü*, 33
- Not known to occur geologically in Yunnan, according to most authorities, 33
- Discovery of, *in situ* in Siberia by Prof. Jaczewski, 35
- Arsenopyrite a characteristic accompaniment of, in Reichenstein region, 46
- Jade—*continued*
- Nodular aggregations of, surrounded by broken crystals of arsenopyrite, 46
- Fischer's theory weakened by discovery of, *in situ* in Silesia, 46
- Quarrying of, a privilege of native medicine-men in Alaska, 49
- Prehistoric and aboriginal implements of, 53, 54
- Casts intended to illustrate history of, in Europe, 55
- Partially worked pieces of, 55, 56, 96, 97
- Old methods of working, 55
- Ornaments and ceremonial objects of, 56, 97–101
- Most difficult of all minerals to work, 57
- Ethnographic theories regarding original home of, 57
- Dr. Meyer's remarks on hatchet of very rare variety of, 61
- Prehistoric relics of, found in pile-dwellings of Lake Constance region, 66
- Peculiar substance and color of many specimens of Oceanic or New Zealand, 68
- Gritstones used by natives of New Zealand in working, 73
- Use of, by Eskimos for knives and knife-sharpeners, 83
- Two sections of hatchet illustrating aboriginal methods of sawing and fracturing, 87
- Prehistoric beads of, from Mexico, 99
- Traditional home of, 103
- Not found *in situ* in Japan, 103
- Chariot-naves of, 103, 104
- Classification of objects of, from China, 114, 115
- Classification of worked objects of, from India, 115, 116
- Classification of objects of, from Annam, 116
- Classification of objects of, from Europe and New Zealand, 116
- Chains of, referred to Ming dynasty in China, 134
- Objects of, attributed to reign of K'ang-hsi, China, 139–158
- Sceptre of, sent by Ch'ien-lung to George III of England, 148
- Objects of, referred to reign of Yung-ch'êng in China, 158, 159
- Objects of, attributed to reign of Ch'ien-lung, 159–234, 236–239, 243–246
- Book consisting of tablets of, 173 (*see also note*)
- Objects of, referred to reign of Chia-ch'ing, 234–242, 247, 248
- Objects of, referred to different periods in India, 248–260
- Jade, Art Objects of, 114 *et seq.*
- Jade, Essay or Discourse on, by T'ang Jung-tso, 10, 141
- Jade, Illustrated Descriptions of Ancient, 103 (*note*), 189
- Jade Book (*Yü Shu*), nephrite, reign of Ch'ien-lung, China, 173 (*see also note*)
- Jade Collection, small section of jadeite presented by Bauer to, 3
- Rough earth-covered piece of jadeite procured at Shanghai for, 6
- Section of boulder procured for, by Dr. Bushell, 6
- Jadeite specimen presented by Dr. A. B. Meyer of Dresden to, 7
- Jadeite fragment purchased by Dr. Edkins at Shanghai for, 10
- Jadeite beads presented by Prof. Damour to, 15
- Small square slab of jadeite presented by Damour to, 16
- Jadeite fragment presented to, by Prof. E. Cohen, 16
- Little jadeite figure of Venus de Milo in, 16, 17
- Small thin slab of very dark jadeite presented by Damour to, 18
- Three nephrite pebbles presented by Dr. Svën Hedin to, 19
- Nephrite fragment presented to, by Prof. Weinschenk of Munich, 20
- Fragment of nephrite boulder from Tunga valley presented by Muschketow to, 24
- Fragment of nephrite boulder from Raskam Daria presented by Muschketow to, 25
- Characteristics of tiny piece of Tamerlane's nephrite monolith in, 26
- Historic fragment of nephrite monolith added to, through courtesy of Prof. Putnam, 26
- Section of good-sized nephrite boulder procured by Dr. Bushell for, 27
- Examples in, of possible occurrence of jade *in situ* in China proper, 29
- Nephrite specimen purchased by Dr. Edkins in Shanghai for, 29
- Nephrites in, formed by amphibolical alteration of jadeite or pyroxene, 33
- Small nephrite slab presented to, by Prof. Jaczewski, 35
- Rough fragment of primary nephrite presented to, by Prof. Jaczewski, 36
- Specimen taken by Jaczewski from immense nephrite boulder and presented to, 37
- Oblong nephrite fragment presented to, by Prof. Jaczewski, 41
- Small piece of jadeite presented to, by Prof. F. Berwerth, 47
- Jade Collection—*continued*
- Nephrite pebbles presented to, by Morris K. Jesup, 47
- Specimen of Alaskan nephrite presented by United States National Museum to, 48
- Aboriginal griststone, adapted for cutting grooves in nephrite, presented to, 53
- Nephrite battle-axe most weighty and powerful of aboriginal weapons in, 55
- Casts acquired in earlier days of, 55
- Two nephrite aboriginal celts in, 55
- Jadeite specimens from Guatemala in, 55, 56
- Small chloromelanite hatchet presented to, by Prof. Damour, 57
- Only example of mixture of glaucophane and zoisite in, 58
- Loeraz only pile-dwelling settlement on Lake Bienné represented in, 65
- Thin flat nephrite knife presented by Mr. Ludwig Leiner to, 68
- Griststone, used to cut grooves in nephrite, presented by Morris K. Jesup to, 73
- Long narrow nephrite hatchet presented by Morris K. Jesup to, 73
- Interesting specimens contributed by Dr. A. B. Meyer to, 88
- Pebbles from jade-rivers of Eastern Turkistan in, 90
- Tomb Jades in, 102–113
- Art Objects in, 114 *et seq.*
- Jade Frame with mirror, reign of Ch'ien-lung, China, 204
- Jade Implements, prehistoric and aboriginal, 53, 54, 56 *et seq.*
- Jadeite, small flat section of mined fragment of, 3
- Microscopical examination and chemical analysis of, 3
- Rearrangement of molecules in, produced by crushing and pressure, 3
- Analysis of specimen of, by Busz, 3
- Thick flat section of, 3
- Small angular fragment of, 4
- Fragment of much-weathered boulder of, 4
- Interstitial minerals weathered out from, 4
- Cement or matrix for prisms of, 4, 5
- Four specimens of, tested for resistance to compression, 4
- Comparative table showing composition of specimen of, 4
- Flat angular fragment of, 4
- Thick lozenge-shaped section of, 5
- Rectangular block of, from which specimens have been sawed, 5
- Grains or anhedral of, 5
- Colorless mineral with lower index of refraction than that of, 5
- Matrix containing small prisms of, lying in all positions, 5
- Resistance tests of material taken from block of, 5
- Tests showing remarkable tenacity of, 5
- Section of pebble of, with polished facets and reddish-brown "skin," 6
- Half of rough earth-covered piece of, 6
- Crystalline structure of Burmese, 6
- Very pure, consisting of irregularly shaped colorless anhedral, 6
- Exterior section of weathered mass of, 6
- Section of weathered block of coarsely crystalline, 6
- Thick slab cut from weathered and water-worn boulder of, 6
- Section of fissured and stained boulder of, 7
- Small fragment of translucent coarsely crystalline, 7
- Number of needles enclosed in, 7
- Two slabs of, brought from Upper Burma, 7
- Ultimate strength of specimens of, 7
- Three analyses of, made by Walden, 7
- Small cylinder of, probably from Burma and cut in China, 8
- Fragment of weathered mass of, 8
- Small crude piece of deep-green, 8
- Irregularly shaped fragment of lettuce-green, 9
- Triangular piece sawed from mass of, 9
- Irregularly shaped weathered fragment of, slightly altered by hydration, 9
- Crude fragment of homogeneous coarsely crystalline, 10
- According to T'ang Jung-tso certainly known to occur *in situ* only in Burma, 10
- Canton possibly chief entrepôt for Burmese, 10
- Not a natural product of Yunnan, 10
- Fragment of coarsely crystalline, 10
- Crude fragment of highly crystalline, 10
- Cuboidal fragment of compact and homogeneous, 11
- Small crude fragment of, partly sawn and partly broken from larger piece, 11
- Rough fragment of, polished on one face and showing saw-marks on another, 11
- Rough fragment of, with one sawn face and one curved polished face, 11
- Flat fragment of, with two faces showing saw-marks, 11
- Broken cylindrical core of, 12
- Irregularly shaped anhedral of colorless, 12



Jadeite—*continued*

Flat circular piece of, with two rough faces, 12  
 Cylindrical core of homogeneous and compact, 12  
 Cylindrical core of, still attached to part of rough mass, 12  
 Small disc of white translucent, 13  
 Raised disc attached to larger thin disc of, 13  
 Rough partly cut piece of, 13  
 Partly worked fragment of, 13  
 Small polished disc of translucent, 13  
 Large segment of circular medallion of, 14  
 Remainder of small ornamental Chinese pendant of, 14  
 Fragment of ornamental pendant of, 14  
 Irregularly shaped crystals in cement of crushed, 14  
 Two beads and slide of Burmese, 15  
 Fibrous modification of, seen under microscope, 15  
 Large compact crystals of, changed into groups of nearly parallel prisms, 15  
 Two beads of, from China, probably of Burmese origin, 15  
 A silicate of alumina and soda, 15  
 Distinguished from nephrite and named by Damour, 15  
 Analysis that led to establishment of, 15  
 Fragment of boulder of, probably from Tibet, 15  
 Staining possibly due to decomposition of, 15  
 Thin slab of, probably from Tibet, 15  
 Thin slab of, separated from original block, 16  
 Small square slab of, said to be of Tibetan origin, 16  
 Small fragment of, presented to Collection by Prof. Cohen, 16  
 Specimen of, shown to belong to pyroxene group, 16  
 Two angular fragments of, from large weathered mass, 16  
 Bust of Napoleon III cut from large weathered mass of, 16  
 Material found by Iddings to be almost pure, 17  
 Aggregation of irregularly shaped crystals of, 17  
 Mineral filled with inclusions of, 17  
 Presence of andalusite in rock of almost pure, 17  
 Two angular fragments of weathered and water-worn mass of, 17  
 Small angular fragment of, said to have been brought from Tibet, 17  
 Thin slab cut from boulder or weathered mass of, 18  
 Fragment of specimen of, from northern Himalayas, 18  
 Bauer finds mixture of plagioclase, nephelite, and, 18  
 Small thin slab of very dark, 18  
 Fusion of gray mineral before blowpipe gives strong sodium flame indicating, 22  
 Nephrite presumably derived from, 23  
 Tiny piece of Tamerlane's nephrite monument with included crystals of possibly unaltered, 26  
 Patches with nearly parallel fibres suggesting former crystals of, 27  
 Nephrite fragment proved by microscope to be result of amphibolic alteration of, 28  
 Nephrite derived from original rock of coarse-grained, 28  
 Microstructure resulting from amphibolic alteration of, 29, 32  
 Comparative tension test of specimen of crystalline, 32  
 Nephrite specimen with occasional remaining fragments of, 32  
 Nephrites formed by amphibolic alteration of, 33  
 Microstructure seen with microscope to be result of amphibolic alteration of, 34  
 Fragment of specimen of, cut from axe found in forest of Lengyel, 47  
 Prehistoric and aboriginal implements of, 53, 91 *et seq.*  
 Implements of, found in Europe, 55  
 Human figure fashioned in translucent bluish-green, 55, 95  
 Two well-known ceremonial celts of, 55, 95, 96  
 Ancient worked fragment of, from Guatemala, 55, 96  
 Specimens of, discovered at altitude of 11,000 feet on Mount Tacana, 55, 56, 72, 96, 97, 98  
 Existence of crude, in pre-Columbian period in Guatemala or Mexico, 56, 96  
 Ornaments and ceremonial objects of, varied in tint, 56, 97-101  
 Finely sculptured amulet of lettuce-green, 56, 100  
 Little Mexican mask carved in light emerald-green and gray, 56, 98  
 Long tubular bead of rounded square section wrought in greenish-gray, 56, 99  
 Tiny amulet of brilliant lettuce-green, of Mexican origin, 56, 100  
 Small idol of sage-green, 56, 101  
 Curious trumpet-shaped ornaments of, worn in ears by ancient Mexicans, 56  
 Fragment of sage-green pendant of, from Yucatan, 56, 101  
 Human teeth inlaid with, from Mexico and Yucatan, 56, 101

Jadeite—*continued*

Prehistoric hatchet of, found among remains of pile-dwellings in Switzerland, 56  
 Thick flat hatchet, with holder, composed of mixture of nephrite, zoisite, and, 58  
 Small hatchet of, found among remains of ancient pile-dwellings near Yverdon, 59  
 Prehistoric hatchet of, found among remains of ancient pile-dwellings in Switzerland, 59  
 Small flat hatchet of, with straight cutting edge, from Swiss pile-dwellings, 59  
 Hatchet of, with sharp, somewhat crescent-shaped cutting edge, 60  
 Hatchet of, with slightly curved faces and flat sides, from Switzerland, 60  
 Long thick chisel of, with rounded body and sharp cutting edge, 63  
 Knife of, broken or unfinished at top, from pile-dwellings of Switzerland, 65  
 Knife of, with horn handle, found among remains of pile-dwellings at Lüscherz, 65  
 Specimens of, collected from prehistoric settlements in Lake Constance region, 66  
 Long hatchet of, found among ruins of lake-dwellings on Lake Constance, 66  
 Hatchet of, found among remains of ancient pile-dwellings near Wallhausen, 67  
 Long prehistoric knife of, with sharp straight edge and rounded sides, 68  
 Short stumpy hatchet of, with slightly crescent-shaped cutting edge, 68  
 Small hatchet of, short and stumpy, with fairly good cutting edge, 68  
 Prehistoric hatchet of, with wide rounded cutting edge, from Authon in France, 69  
 Prehistoric hatchet of, with rounded cutting edge, found at Puy-laurens in France, 69  
 Small thick chisel of, with rounded cutting edge, from Bonnieux in France, 69  
 Prehistoric hatchet of, entirely hammered into shape, from St. Julian in France, 70  
 Small hatchet of, with slightly curved cutting edge, from St. Julian in France, 70  
 Hatchet of, with curved cutting edge and bulging faces, from St. Julian, 70  
 Relatively long narrow hatchet of, from St. Julian in Haute-Garonne, France, 70  
 Long thick narrow prehistoric axe of, found in Mexico, 70  
 Short thick prehistoric chisel of typical Mexican, 71  
 Small hatchet of, with curved cutting edge in perfect condition, from Guatemala, 71  
 Part of prehistoric hatchet of, from Guatemala, 72  
 Chisel of, with thick body, wide cutting edge, and smoothed faces, from Guatemala, 72  
 Knife of, with flat top, straight sides, and blunt edge, from Guatemala, 72  
 Prehistoric hatchet of, with perfect outline and fine finish, from Jamaica, 72  
 Hatchet of, rounded in section, with curved faces, probably from West Indies, 72  
 Small thick pendant of, perhaps intended to represent human head, 98  
 Prehistoric beads of, from Mexico, 99  
 Prehistoric Mexican ear-ornament of, 99  
 Curved bead of, much used in early times in Japan, 113  
 Lion of, probably dating from before Ming dynasty, China, 118  
 Stork of, referred to Ming dynasty, China, 118  
 Snuff-bottles of, Ming dynasty, China, 119, 122  
 Water-receptacle of, Ming dynasty, China, 119  
 Small quadrangular vase of, Ming dynasty, China, 119  
 Pendant of, Ming dynasty, China, 119  
 Pair of cups of, Ming dynasty, China, 120  
 Oval dish of, Ming dynasty, China, 120  
 Tray of, Ming dynasty, China, 120  
 Plum-tree vase of, Ming dynasty, China, 120  
 Gourd-shaped vase of, Ming dynasty, China, 121  
 Vase of, Ming dynasty, China, 121  
 Objects of, referred to reign of Kang-hsi, China, 139-143  
 Oval vase, with cover, carved in reign of Yung-ch'eng, China, 158  
 Objects of, referred to reign of Ch'ien-lung, 159-173, 237, 239, 243  
 Objects of, referred to reign of Chia-ch'ing, 237, 238, 239, 240, 247  
 Jewelled butterfly of, eighteenth century, India, 256, 257  
 Objects of, referred to different periods in Annam, 261-263  
 Statuette of Venus de Milo carved in, 264  
 Jadeite-quartzite, cup of, referred to Ming dynasty, China, 122  
 Jadeit und Nephrit Objecte (Meyer), 55, 91, 92, 93, 94, 95  
 Jade Localities. *See* the various geographical names  
 Jade-miners, method of quarrying jade used by Burmese, 11

Jade-mines, Dr. Fritz Noetling's visit to, 3  
 Burmese, still in hands of Kakyens, 10  
 Dr. Noetling's discovery and description of Burmese, 10  
 China dependent on Turkistan, for jade material, 29  
 Jade-mining, method of, in Burma, 11  
 Jade Mountain, crude nephrite fragment found in vicinity of, in Alaska, 47, 48  
 Crude nephrite fragment, with two cut and polished surfaces, from, 48  
 Section of rough nephrite block obtained by Lieut. Com. Stoney, U. S. N., near, 49  
 Jade-quarries, jadeite carried overland to Yunnan from Burmese, 7  
 Now almost entirely abandoned in K'un Lun Mountains, 19  
 Nephrite fragment brought by Schlagintweit from, near Gulbāshen, 20  
 Section of nephrite block from, in K'un Lun Mountains, 23  
 Jade River, Black. *See* Karakāsh  
 Jade River, White. *See* Yürüŋkāsh  
 Jade-rivers, pebbles found in, of Khotan, 29  
 China dependent on Turkistan, for jade material, 29  
 Pebbles from Eastern Turkistan, 90  
 Jades, Tomb (Chinese *Han Yü*), 54, 102-113  
 Jade Weapons, aboriginal, 54, 55, 89, 90  
 Jade-workers, remarkably bold and splendidly executed example of skill of, 111  
 Jahrbuch für Mineralogie, Neues, 16, 42  
 Jalisco, human teeth inlaid with jadeite found in grave in state of, 56, 101  
 Jamaica, prehistoric or pre-Columbian jade celt from, 53  
 Prehistoric jadeite hatchet, of perfect outline and fine finish, from, 72  
 Japan, jade not found *in situ*, or geologically, in, 103, 113  
 Curved jadeite bead much used in early times in, 113  
 Bear a sacred animal of aboriginal inhabitants of, 113  
 Japanese, kudatama (tubular bead) of ancient, 99  
 Japanese and Chinese Paintings in British Museum, Catalogue of, 200  
 Jar and cover, jewelled nephrite, seventeenth century, India, 254, 255  
 Jars (*Hsiao Kuan*), pair of small nephrite, reign of Ch'ien-lung, China, 245  
 Jasper, much altered portion of nephrite boulder resembling impure, 31  
 Splinters of, found in forest of Lengyel, Tolna, Hungary, 47  
 Jehan, Shah. *See* Shah Jehan  
 Jehanghir, Mogul emperor, Indian art objects of jade referred to reign of, 115, 256  
 Jeremejew, Prof. von, nephrite specimen obtained by Arzruni through, 35  
 Jesup, Morris K., nephrite pebbles presented to Collection by, 47  
 Aboriginal gritstone, used to cut grooves in nephrite, presented to Collection by, 73  
 Long narrow nephrite hatchet presented to Collection by, 73  
 Jesup North Pacific Expedition of 1897, 47, 53, 73  
 Jewellery, gold-mounted jadeite (*Shou Shih*), reign of Ch'ien-lung, China, 115, 243  
 Johanneum, Museum. *See* Museum Johanneum  
 Jordansmühl, variety of clinochlore found in nephrite specimen from, 40  
 Mammoth nephrite block discovered by Mr. George F. Kunz in stone-quarry near, 41, 42, 43  
 Pyroxene found by Traube in nephrite from, 42  
 Large broken fragment of nephrite found in, 43  
 Thin nephrite fragment, polished on one face, from, 44  
 Rough fragment of translucent nephrite from, 44  
 Rough nephrite fragment from, with characteristic splintery structure, 44  
 Fractured specimen of nephrite from, resembling pouamu of New Zealand, 44  
 Fragment of rough nephrite mass from, showing surface of vein, 44  
 Section of crude block of nephrite from, 45  
 Fragment of nephrite found in quarry at, 45  
 Small fragment from mammoth nephrite block discovered by Mr. Kunz in, 45  
 Ju-i (Chinese). *See* Sceptre  
 Julien, Prof. Stanislas, record of Tai Tsung's journey translated by, 145  
 Jung-tso, Tang. *See* Tang Jung-tso  
 Jurié, Dr. Gustav von, small human figure of jadeite purchased from, 95  
 Ju-ro, Japanese name of Shou Lao, Chinese deity of longevity, 152, 214



Kachins, digging at jade-mines in Burma carried on by, 10

*Kai Oh'a Wan* (Chinese). *See* Cups with covers

*Kai Lu* (Chinese). *See* Incense-burners with covers

*Kai Ping* (Chinese). *See* Vases with covers

*Kai Wan* (Chinese). *See* Bowl, Bowl with cover, and Cups with covers

*Kai Wan Lu* (Chinese). *See* Incense-burners

Kakyens, Burmese jade-mines still in hands of, 10

Kaltakumat, Dr. Svën Hedin's excursion from Ilchi to, 19

K'ang-hsi, Chinese emperor, jade objects referred to reign of, 139-158

*Kang Mao* (Chinese). *See* Signet

*Kang-T'ou* (Chinese). *See* Chariot-wheel Nave

*Kapehu* (Maori). *See* Pendant

Karakásh (or Black Jade) River, source of, 19

Nearly all of twenty-one nephrite pebbles from, 21

Twenty-one nephrite pebbles of diverse coloring probably from, 21, 22

Boulders and pebbles from, frequently darker in color, 23

Section of good-sized water-worn nephrite boulder probably from, 27

Long flattish nephrite boulder perhaps derived from, 31

Karakoram Mountains, Yárkand River rises in, 25

Kashmir, possible jade locality in, 17

Katu, aboriginal nephrite fighting-pick of natives of Alaska, 54, 89

Keller, Dr., on duration of pile- or lake-dwellings, 57

Khotan, jade reported found in country south of, 17

Eighteen small nephrite pebbles from rivers of, 18, 19

Three small nephrite pebbles from, 19

Twenty-one nephrite pebbles from rivers of, 20, 21

Twenty-one nephrite pebbles of diverse coloring from river-beds of, 21, 22

Section of crude nephrite mass from, 23

Section of water-worn boulder of translucent nephrite from, 23

Section of water-worn boulder from one of the jade-rivers of, 23

Fragment of large nephrite block quarried in, 24

Manas situated about half-way between Sajan Mountains and, 26

Section of good-sized water-worn nephrite boulder from some river of, 27

Pebbles found in jade-rivers of, 29

Specimens of nephrite labelled "China" probably product of, 29

Ki-a-drum (Harpoon-head), nephrite, set in shank of walrus-bone, 85

Kiangsi, source of Liu Yang River in mountains bordering province of, 23

Kingsborough, Lord, Humboldt Celt first illustrated in work by, 96

Kit-Ax, nephrite specimen said to have been procured among tribe of, 74

Kitoi Alps, small rough fragment of nephrite from, 34

Section of small nephrite boulder from, 34

Small nephrite slab discovered by Jaczewski in, 35

Rough fragment of primary nephrite discovered by Jaczewski in, 36

Great beds of nephrite on northern slope of, 37

Kleezkowsky, Count, gold-mounted jadeite jewels obtained in Peking by, 115, 243

Knife, very tiny nephrite, in holder, from lake-dwellings of Switzerland, 58

Prehistoric nephrite, with horn handle, from Lake Neuchâtel, Switzerland, 64

Small prehistoric nephrite, found among remains of ancient Swiss pile-dwellings, 64

Nephrite, with narrow head and much wider cutting edge, 64

Small nephrite, found in ancient pile-dwellings of Lake Neuchâtel, Switzerland, 64

Prehistoric nephrite, found among pile-dwelling remains of Lake Neuchâtel, 65

Jadeite, broken or unfinished at top and hammer-roughened on both sides, 65

Small thick nephrite, sawed from larger mass and smoothed by grinding, 65

Prehistoric jadeite, with horn handle, from Lake Bienne, Switzerland, 65

Nephrite, with horn handle, found among pile-dwellings in front of Lüscherz, 66

Nephrite, smooth but not polished, from remains of pile-dwellings on Lake Constance, 67

Prehistoric rhodo-nephrite, broken at one end, from Maurach, Lake Constance, 67

Thin flat nephrite, with almost crescent-shaped cutting edge, 68

Long prehistoric jadeite, with sharp straight edge and rounded sides, from France, 68

#### Knife—continued

Short thick nephrite, smooth all over but not polished, from Alzonne, 69

Jadeite, with flat top, straight sides, and blunt edge, found in Guatemala, 72

Short nephrite, with wide slanting cutting edge, found in British Columbia, 75

Small wedge-shaped nephrite, with flat faces, sides, and top, 75

Small nephrite, with wide cutting edge in good condition, 75

Thick nephrite, with wide cutting edge slightly notched and carefully rounded sides, 75

Very small nephrite, probably used for engraving purposes, 81

Small nephrite, smoothed on one face and intended for use in wood-carving, 81

Nephrite, of kind used by women for domestic purposes, 81

Small chisel-like nephrite, with thickish body of irregular section, 81

Small nephrite, with sharp edge at one end produced by grinding, 82

Long thin-bladed nephrite, set in thick holder of wood, 82

Thin flat nephrite, with cutting edge ground from both faces, 82

Nephrite, in form of thin flat triangular slab curving on one side, 82

Nephrite, pierced at upper end for suspension, 86

Knife-sharpener, long finger-like piece of nephrite used as, 83

Relatively long tapering piece of nephrite used as, 83

Long nephrite, with slightly convex faces and rounded sides, 83

Nephrite, with perforation near the butt drilled from both faces, 83

*See also* L-pik-sawn

Knives, imperial jade-handled (*Huang Yü Tao*), reign of Ch'ien-lung, China, 244

Knobs, ornamental (*Ting*), of nephrite, Ming dynasty, China, 130, 131

Knollys, Capt. Henry, Incidents of China War, 124, 227 (*note*)

Kotzebue Sound, fragment of nephrite from, 49

Aboriginal small rough nephrite ud-lé-mau (adze) from, 79

Broken nephrite adze, with flat sides, from, 79

Long narrow nephrite adze, with straight cutting edge and pointed head, from, 79

Thick nephrite hatchet, with wide straight cutting edge, from, 80

Very small nephrite knife, probably used for engraving purposes, from, 81

Aboriginal nephrite u-lí-ra (knife) from, 81

Small chisel-like nephrite knife, with thickish body of irregular section, from, 81

Relatively long tapering piece of nephrite used as knife-sharpener by aborigines of, 83

Nephrite knife-sharpener, with perforation near the butt drilled from both faces, from, 83

*Ko-tsü* (Chinese). *See* Dove

*Kou-tsü* (Chinese). *See* Girdle-buckle

Kriegsheim, Lieut. Osar von, nephrite block discovered by G. F. Kunz on estate of, 41

*Ku* (Chinese). *See* Vase

*Kuan* (Chinese). *See* Vase

Kuang-hsü, Chinese emperor, jade ju-i (sceptre) sent to Queen Victoria by, 148

*Kua Ping* (Chinese). *See* Wall-vase

Kublai Khan, Mongol emperor, 155

*Ku Chüeh* (Chinese). *See* Libation-cup

*Kudatama* (Japanese). *See* Bead

*Kuei* (Chinese). *See* Tablet of Rank

*Kuei Pi* (Chinese). *See* Tablet

K'un Lun Mountains, great jade-quarries in, now almost entirely abandoned, 19

Small nephrite fragment brought from, 20

Gulbáshen a caravan halting-place on south side of, 20

Reliable information regarding occurrence of jade in, 20

Section of nephrite block from quarry in, 23

Only definitely known source of jade in Central Asia, 26

Paradise of Taoists in, 126

Jade the special product of, 198

Kunz, George Frederick, source of jadeite slab stated orally by Damour to, 18

Fragment of great nephrite monolith of Tamerlane in collection of, 26

Mammoth nephrite block discovered by, near Jordansmühl in Silesia, 41

Small fragment selected by, from mammoth block of nephrite, 45

*Kuo Pan* (Chinese). *See* Dishes

*Kuru* (Maori). *See* Ear-drop

*Ku T'ung Hua Ku* (Chinese). *See* Beaker

Ku Yü T'ou Pu (Illustrated Descriptions of Ancient Jade), 103 (*note*), 189

Lacquer, nephrite block with remains of surface decoration in gold and red, 26

Lake Baikal, small fragment cut from nephrite boulder found near, in Siberia, 35

Lake Bienne, discovery of prehistoric objects in, 57

Jadeite knife, with horn handle, found in remains of pile-dwelling settlement on, 65

Systematic exploration of remains of prehistoric lake-dwellings on, 65

Nephrite knife, with horn handle, found in remains of pile-dwellings on, 66

Lake Bourget, discovery of prehistoric objects in, 57

Lake Constance, finding of prehistoric objects in, 57

Prehistoric nephrite hatchet found among remains of ancient pile-dwellings on, 66

Thoroughly explored since 1856, 66

Prehistoric nephrite hatchet from site of ancient pile-dwelling on, 66

Long jadeite hatchet found among ruins of ancient lake-dwellings on, 66

Broken nephrite hatchet, with straight sides and sharp curved cutting edge, from, 67

Jadeite hatchet found among remains of ancient pile-dwellings on, 67

Nephrite knife, smooth but not polished, from remains of pile-dwellings on, 67

Prehistoric rhodo-nephrite knife, broken at one end, from Maurach on, 67

Thin flat nephrite knife found among remains of pile-dwellings at Bodmann on, 68

Lake-dwellers, village of, discovered by Dr. Jacob Messikomer, 57

Rough deer-horn, not bone, used for handles by Swiss, 78

Lake-dwellings, jade implements from, of Switzerland, 53

Very tiny cutting-implement, in deer-horn handle, from Swiss, 58

Nephrite hatchet found among piles of ancient Swiss, 61

Small nephrite hatchet, of good outline, from ancient Swiss, 61

Systematic exploration of remains of, on Lake Bienne, near Loceraz, Switzerland, 65

Long hatchet of jadeite found among ruins of ancient, on Lake Constance, 66

Prehistoric jade weapons and implements discovered among remains of, 116

*See also* Pile-dwellings

Lake-Dwellings (Keller), references to, 57

Lake Neuchâtel, nephrite specimen found among remains of pile-dwellings of, 47

Discovery of prehistoric objects in, 57

Jadeite-nephrite-zoisite hatchet, with holder, from pile-dwellings of, 58

Small jadeite hatchet found among remains of ancient pile-dwellings on, 59

Explorations among pile-dwellings of, begun in 1854, 59

Prehistoric jadeite hatchet found among remains of pile-dwellings on, 59

Small flat jadeite hatchet, with straight cutting edge, from pile-dwellings of, 59

Jadeite hatchet, with sharp, somewhat crescent-shaped cutting edge, from, 60

Jadeite hatchet, with slightly curved faces and flat sides, from, 60

Small flat chloromelanite hatchet found in remains of pile-dwellings on, 60

Wedge-shaped nephrite hatchet, broken at upper end, from, 61

Nephrite hatchet found among piles of ancient lake-dwellings on, 61

Small nephrite hatchet, of good outline and smoothed all over, from, 61

Nephrite hatchet, narrow at top and wide at cutting edge, found on, 61

Nephrite hatchet, with smooth flat faces and stained sides, from, 62

Small thick broken nephrite hatchet from pile-dwellings of, 62

Part of small thin flat nephrite hatchet, with sharp cutting edge, from, 63

Small narrow thick nephrite chisel found among remains of pile-dwellings on, 63

Small thick nephrite chisel found among remains of ancient pile-dwellings of, 63

Long thick jadeite chisel, with rounded body and sharp cutting edge, from, 63

Prehistoric nephrite knife, with horn handle, found in pile-dwellings of, 64



- Lake Neuchâtel—*continued*  
 Tiny nephrite knife found among remains of ancient pile-dwellings of, 64  
 Nephrite knife, with narrow head and much wider cutting edge, from, 64  
 Small nephrite knife found in ancient pile-dwellings on, in Switzerland, 64  
 Prehistoric nephrite knife found among pile-dwelling remains on, in Switzerland, 65  
 Jadeite knife, broken or unfinished at top, from ancient pile-dwellings of, 65  
 Small thick nephrite knife found in ancient pile-dwellings of, 65
- Lake Pfäffikon, discovery of prehistoric objects on, 57  
 Lake Zug, discovery of prehistoric objects in, 57  
 Lake Zürich, piles and other remains observed at Ober Meilen on, 56
- Landscape Mountain (*Shan-tzu*), of nephrite, reign of K'ang-hsi, China, 148
- Lan-tien, mentioned as jade locality in Chinese topographies, 29
- Lan T'ing, or Orchid Pavilion, 223
- Lan Ts'ai-ho, Taoist divinity, 161, 163
- Lao-tzu, visit of Confucius to, 135  
 Celebrated founder of Taoism, 149, 153, 242
- Lapidary, jadeite figure of Venus de Milo made by noted, 16  
 Brush designs of, 22  
 Fifth side of section of nephrite pebble beautifully polished by, 25  
*Yun Pi Yü* of Chinese, 33  
 Primitive methods of sawing and hammering followed by prehistoric, 54  
 Two sections of nephrite hatchet illustrating methods of prehistoric, 87
- Lapidary, Imperial. *See* Imperial
- Lazareth-gasse, Gratz, nephrite pebble picked from gravel-heap at entrance of, 55, 91
- Legge, Chinese Classics translated by, 156 (*note*), 232 (*note* 9)
- Leiner, Ludwig, on jade specimens collected from settlements in Lake Constance region, 66  
 Name *rhodo-nephrite* first applied by, 67  
 Thin flat nephrite knife presented to Collection by, 68
- Leipzig, Ethnological Museum at, 93, 94, 95
- Lena, discovery of remains of mammoth near mouth of, 266
- Lengyel, fragment of jadeite specimen cut from axe found in forest of, 47
- Les Utins, relics of stone and bronze ages discovered at, 59
- Leyden Museum, ceremonial jadeite celt known as Leyden Plate now in, 55, 95, 96
- Leyden Plate, cast of, from original now in Leyden Museum, 55, 95, 96
- Li, Chinese artist, inlaid screen-picture illustrated in water-colors by, 115
- Liang Kuo-chih, Chinese mandarin, 173 (*see also note*), 174
- Libation-cup, Chinese, of nephrite, dating from Han dynasty, 108  
 Archaic (*Ku Chüeh*), of nephrite, reign of K'ang-hsi, China, 153
- Lien-hua P'ing (Chinese). *See* Vase
- Li Mao, the "Orpheus" of China, 186 (*see also note* 3)
- Lime, percentages of, in specimens, 3, 4, 5, 7, 8, 12, 14, 16, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 59, 60, 61, 62, 71, 74, 88, 95, 97, 98, 104, 106, 109, 118  
 Nephrite a silicate of magnesia and, 15
- Limonite, stains caused by finely disseminated, 22
- Ling-chih Kuan (Chinese). *See* Water-jar
- Ling Kuan (Chinese). *See* Plume-holder
- Lin Pu, celebrated Chinese official, 208 (*note* 2)
- Lion (*Shih-tzu*), jadeite, probably dating from before Ming dynasty in China, 118
- Lions (*T'ai Shih Hsiao Shih*), large and small nephrite, Ming dynasty, China, 128  
 (*Shih-tzu*), nephrite, reign of Ch'ien-lung, China, 180
- Li Tai-po, famous Chinese poet, 202
- Li T'ieh-Kuai, Taoist divinity, 161, 163
- Little Charock River, primary deposit of nephrite on tributary of, 35
- Little Tibet, or Baltistan, possible jade locality, 17
- Liu, Chinese author, 236
- Liu Han, one of the Taoist genii, 236
- Liu Ping-t'ien, Chinese scholar and statesman, 186 (*see also note* 5)
- Liu Yang, nephrite pebbles said to have been found near city of, 29
- Liu Yang River, four nephrite pebbles said to have been found in bed of, 29
- Localities of Jade. *See* the various geographical names
- Locraz. *See* Lüscherz
- Lo-han (Chinese). *See* Arhats and Buddhist Figures
- Longevity Deity. *See* Deity of Longevity
- Longevity Mountain (*Shou Shan*), carved in nephrite, reign of Ch'ien-lung, China, 216  
 (*Ta Shou Shan*), large nephrite, reign of Ch'ien-lung, China, 226
- Louvre, jadeite statuette copy of celebrated Venus de Milo in, 116
- Loving-cup, miniature (*Chiu Pei*), of nephrite, Ming dynasty, China, 129
- Lu. *See* Fu
- Luedecke, analysis of glaucophane by, 59
- Lu, Ho, P'ing (Chinese). *See* Altar Set and Incense-burner Sets
- Lun (Chinese). *See* Wheels
- Lung Erh Hsi (Chinese). *See* Bowl
- Lung Feng P'ing (Chinese). *See* Vase
- Lung Men, or Dragon's Gate, famous Chinese gorge, 153, 183
- Lüscherz (Locraz), jadeite knife, with horn handle, found in remains of pile-dwellings at, 65  
 Small nephrite cutting-implement found among remains of pile-dwellings near, 66
- Lü Tung-pin, Taoist divinity, 161, 163
- Lyra, one of the Cyclopes, two analyses of glaucophane from, 59
- Lytton, nephrite pebble found between Fraser and Thompson rivers in vicinity of, 47  
 Aboriginal grit-stone dug up from burial-place at, 53, 73
- Macartney, Earl, reception of, by Emperor Ch'ien-lung, 148
- Magatama (Japanese). *See* Bead
- Magma, beautiful coloring shown by, 6  
 Jadeite crystals in more compact and darker, 16  
 Crystalline patches probably of some hornblende mineral embedded in, 35
- Magnesia, percentages of, in specimens, 3, 4, 5, 7, 8, 12, 14, 16, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 59, 60, 61, 62, 71, 74, 88, 91, 95, 97, 98, 104, 106, 109, 118  
 Specimen composed of jadeite and amphibole rich in, 8  
 Nephrite a silicate of, 15
- Magnetite, small opaque specks probably of, usually with irregular outline, 17  
 Spots in nephrite fragment possibly identified as, 41  
 Small amount of opaque black mineral suggesting, 43, 44  
 Black color of nephrite due to inclusions of chromic iron or, 45
- Ma Hung-sin, Mohammedan dealer in jade, 29
- Mammoth, miniature nephrite, carved in St. Petersburg, 266
- Man, Prehistoric. *See* Prehistoric Man
- Manas, green variety of jade from, 26  
 Deep-green variety of jade called Ma-na-ssü because product of, 26  
 Portion of large water-worn nephrite boulder thought to come from, 26  
 Great monolith on tomb of Tamerlane (Timur) said to have come from, 26  
 Dark-green nephrites of, 33
- Ma-na-ssü, deep-green variety of jade called by dealers, 26
- Mandalay, establishment of safe and rapid steam communication from, 7  
 Jade sold to Cantonese by traders at, 10
- Mandarin Beads. *See* Beads
- Manganese, substance resembling black oxide of, 9  
 Amethystine hue more pronouncedly that of chrome salt than of, 15
- Manganese, Oxide of. *See* Oxide of Manganese
- Manganous Oxide, percentages of, in specimens, 7, 23, 24, 26, 27, 32, 40, 41, 43, 45, 50, 59, 62, 88, 91, 97, 106  
 Dendritic growths of, 22
- Manganous Protoxide, percentage of, in specimen, 95
- Mao Kuan (Chinese). *See* Plume-holder
- Maoris, great jade axe formerly the property of noted chief of, 54  
 Description and use of *meré* (war-club) of, 54, 55, 90  
 First stages in manufacture of ornamental pendant by aboriginal, 56  
 Aboriginal nephrite pendant of grotesque design carved and worn by, 56  
 Very flat nephrite axe said to have been owned by noted chief of, 87  
 Ear-drops prized, handed down, and celebrated in song and story by, 116, 267
- Marburg, transfer of jade specimens to Dr. Max Bauer of, 3  
 Noetling's declaration to Prof. Bauer of, affirming absence of jade *in situ* in Yunnan, 10
- Marcasite, opaque microscopic crystals that may be, 27
- Marietta, nephrite pebble found by Harlan S. Smith on beach near, 47
- Marin, relics of stone, bronze, and iron ages discovered at, 59
- Maritime Customs, Chinese Imperial, 10, 211 (*note*)
- Marmolite, veinings of cream-colored mineral resembling, 8
- Marseilles, large quantity of jadeite imported into, from Rangoon, 18
- Maurach, splinters or fragments of nephrite found in dam at, 66  
 Prehistoric rhodo-nephrite knife, broken at one end, from, 67
- Mayans, hieroglyph of, for "sun" identified on jadeite fragment, 56  
 Nine glyphs of, engraved on back of lettuce-green jadeite amulet, 56  
 Culture of, known to Tzentsals, 56, 100  
 Serpent-goddess revered by, 100
- Mayer, Chinese Reader's Manual, 242
- Medallion, large segment of circular jadeite, 14  
 Fragment of oblong nephrite, carved with dragons' heads, 27  
 Fragment of oval carved nephrite, of Chinese workmanship, 28  
 Broken oblong nephrite, with incised Chinese inscription, 28  
 Pierced (*Pi*), of nephrite, from China, 105  
 Perforated (*Pi*), of nephrite, referred to Sung dynasty in China, 117
- Medallions (*P'ai-tzu*), nephrite and jadeite, Ming, K'ang-hsi, and Ch'ien-lung, 129, 131, 158, 160, 179, 181, 182, 183, 185  
 Pierced (*Pi*), of jadeite and nephrite, reign of Ch'ien-lung, China, 160, 183
- Medicine-spades (*Yao-chan*), notion held by Chinese regarding, 89
- Mei Haa P'ing (Chinese). *See* Vase
- Melos, famous statue of Venus found in, 264
- Meré (Maori). *See* War-club
- Mérida, perforated chisel-shaped jade hatchet found on side of mountain near, 55, 94
- Messikomer, Dr. Jacob, lake-dwellers' village of Robenhausen discovered by, 57
- Metamorphism, structure of nephrite indicating high degree of, 18
- Metropolitan Lama of Peking, 174 (*note* 1)
- Mexicans, culture of, known to Tzentsals, 56  
 Curious trumpet-shaped jadeite ear-ornaments worn by ancient, 56  
 Serpent-goddess revered by, 100  
 Mortuary custom of ancient, 105
- Mexico, prehistoric or pre-Columbian jade implements from, 53  
 Existence of crude jadeite in pre-Columbian period in, 56, 96  
 Use of cylindrical drill known to aborigines of, 56, 96  
 Ornaments and ceremonial objects of jadeite from, 56, 98-101  
 Lettuce-green jadeite amulet said to have been found in, 56, 100  
 Curious prehistoric jadeite relics found in, 56  
 Lower specific gravity of jadeite mask from, 60  
 Long thick narrow prehistoric jadeite axe found in, 70  
 Short thick prehistoric jadeite chisel found in, 71  
 Thick chloromelanite chisel, with rounded body and sharp cutting edge, found in, 71  
 Long thick jadeite hatchet said by Dr. Meyer to come from, 94  
 Small human figure of jadeite probably from, 95  
 Copper age reached by, previous to discovery of America, 96
- Meyer, Dr. A. B., jadeite specimen presented to Collection by, 7  
 Small jadeite cylinder obtained from, 8  
 Rough fragment of nephrite procured from collection of, 24  
 Part of nephrite boulder from collection of, 34  
 Small fragment of Siberian nephrite from collection of, 35  
 Part of very thin slab of Siberian nephrite from collection of, 38  
 Cross-section of nephrite boulder from Siberian collection of, 41  
 Section of crude block of nephrite from collection of, 45  
 Small thin slab of New Zealand nephrite from collection made by, 52



Meyer, Dr. A. B.—*continued*

- Jade specimens found in Europe described by, 55
- Remarks of, on hatchet of very rare variety of jade, 61
- On nephrite hatchet and knife from reliable Russian collection, 86
- Interesting specimens contributed to Collection by, 88
- On nephrite pebbles said to have been found in Styria, 90, 91
- On origin of long flat jadeite hatchet, 91
- On finding of perforated jadeite hatchets in Spain, 94
- On Mexican ornamental and sacrificial celts, 94
- Opinion of, regarding origin of long flat nephrite hatchet, 95
- Microscope, true character of jadeite exhibited under, 4
- Characteristics of jadeite specimen revealed by, 5
- Pure jadeite seen under, 6
- Fragment of translucent coarsely crystalline jadeite seen under, 7
- Thin sections of coarsely granular jadeite examined under, 7
- Structure of weathered jadeite mass revealed by, 8
- Result of examination of specimens by Prof. Iddings with, 9
- Results of examination of very pure jadeite specimen under, 10
- Specimen seen to be very pure jadeite when examined under, 10
- Irregularly shaped anhedralons of colorless jadeite shown by, 12
- Coarse-grained jadeite specimen examined by Iddings under, 14
- Small ornamental Chinese pendant of jadeite cut up for study under, 14
- Study of material of jadeite pendant under, 14
- Fibrous modification of jadeite seen under, 15
- Jadeite specimen shown to belong to pyroxene group by examination with, 16
- Material of specimen found by Iddings to be almost pure jadeite under, 17
- Structure of nephrite sword-sheath as viewed with, 18
- Gray and brown sections studied by Iddings with, 22
- Two thin sections of nephrite pebble studied by Iddings under, 22
- Study of thin sections of nephrite under, 23
- Thin sections of nephrite showing signs of former coarse-grained rock under, 23
- Specimen found to be mixture of amphibole fibres when viewed with, 24
- Nephrite specimen seen to have somewhat variable texture when viewed through, 25
- Characteristics of nephrite block as studied in, 26
- Structural characteristics of nephrite boulder as seen in, 27
- Structure of fragment of oblong nephrite medallion as exhibited by, 27
- Nephrite fragment proved by, to be result of amphibolite alteration of jadeite, 28
- Structure of fragment of nephrite medallion as seen under, 28
- Structural features of broken oblong nephrite medallion seen under, 28
- Delicate curved fibres of nephrite seen in, 29
- Thin sections of rough nephrite pebble studied with, 30
- Examination of part of nephrite boulder with, 32
- Nephrite formed by amphibolite alteration of jadeite or pyroxene studied with, 33
- Microstructure seen with, to be result of amphibolite alteration of jadeite, 34
- Nearly colorless to pale-green nephrite seen under, 39
- Study of fragment of huge nephrite block by Iddings with, 41
- Prisms and fibre-bundles stretching beyond field of vision of, 42
- Structure of fractured specimen and of rough fragment of nephrite seen with, 44
- Section of crude block of nephrite studied with, 45
- Examination of thin sections of crude nephrite under, 45
- Minute anhedralons of amphibole and scattered grains of arsenopyrite seen under, 46
- Peculiarities of crude fragment of Alaskan nephrite when examined under, 48
- Crude fragment of nephrite from Jade Mountain, Alaska, examined under, 48
- Structural features of thin slab of New Zealand (?) nephrite seen under, 49
- Small thin broken slab of highly translucent nephrite seen under, 50
- Part of thick cross-section of nephrite boulder examined with, 50
- Nephrite specimen from New Zealand studied with, 56
- Material of nephrite hatchet of usual form seen under, 62
- Study of material of prehistoric jadeite chisel under, 63
- Structure of prehistoric nephrite hatchet from Lake Constance seen under, 66

Middle Island. *See* Te Wahi Pounamu

Milo, Venus de. *See* Venus de Milo

Mineralogie, Neues Jahrbuch für, 16, 42

Mineralogy, System of (Dana), two analyses of glaucophane from, 59

Mines, Imperial School of, at St. Petersburg, 35

Ming Dynasty, China, jade objects referred to, 118-139

Mining Institute at St. Petersburg, 26

Mirror, jewelled nephrite, eighteenth century, India, 257

Mirror-frame, nephrite, seventeenth century, India, 251

*Mo Chuang* (Chinese). *See* Ink-rest

Moguls, Indian jewelled jades of magnificent period of, 115

Mohammedan, jadeite fragment purchased at Shanghai from, 10

Momien, jade-cutting and jade speculation in, 240

Monardes, Nicolas, on bringing of *pedras de hijadas* (jade stones) into Spain, 56, 100

Monk, Buddhist. *See* Buddhist Monk

Monolith, tiny fragment of nephrite from Tamerlane's, 26

Tremendous nephrite beds described by Jaczewski as capable of furnishing material for, 35

Jaczewski sent in search of, for sarcophagus of Alexander III, 40

Monster with Vase, grotesque (*Shou Kai Ping*), of nephrite, Ming dynasty, China, 133

Montauban, General, commanding French forces in China, 223, 243

Moosseedorf, discovery of prehistoric objects at, 57

Morny, Duc de, white jade bottle from collection of, 256

Mosaic, surface of jadeite specimen presenting appearance of, 4

Moss-jade. *See* Pi-yü

Mountain, Longevity. *See* Longevity Mountain

Mountain Landscape, Scene. *See* Landscape, Scene

Mountains. *See* the various qualifying names

Mount Tacana, jadeite specimens discovered at altitude of 11,000 feet on, 55, 56, 72, 96, 97, 98

*Mo-yü* (Chinese). *See* Ink-jade

Münchpaffen, thin flat jadeite (?) hatchet found in, 93

Long flat jadeite hatchet from, 94

Munden, discovery of prehistoric objects in, 57

Munich, original Schlägintweit jade specimens and records preserved at, 20

Discovery of prehistoric objects near, 57

Münster, chemical analysis made by Dr. Carl Busz of, 43

Flat jadeite hatchet in museum at, 93

Münster, Historical and Antiquarian Society at, 92, 93

Mur River, nephrite finds made in valley of, 55

Nephrite proved to exist *in situ* in mountains at source of, 55, 91

Muschketow, Prof. J. W. von, fragment of nephrite presented to Collection by, 24

Fragment of water-worn nephrite boulder presented to Collection by, 25

Several fragments of Tamerlane's nephrite monolith obtained by, 26

Dimensions of Tamerlane's great nephrite monolith as given by, 26

Theory of, regarding nephrite of monolith on Tamerlane's tomb, 26

Muscovite, small crystals of, with bent laminae having fibrous edges, 23

Remnants of, in rock metamorphosed to nephrite, 23

Museum, Dresden. *See* Dresden Museum

Museum, Ethnological, at Leipzig, 93, 94, 95

Museum, Rosgarten. *See* Rosgarten Museum

Museum, Royal, at Cassel, Prussia, 91

Museum, St. Petersburg, celebrated mammoth in, 266

Museum, United States National. *See* United States National Museum

Museum für Volkerkunde, Berlin, 101

Museum Johanneum, Gratz, two rolled pebbles of leek-green nephrite in, 55, 90, 91

Museum of Natural History, American, 26

Museum of Natural History, Imperial, Vienna, 47, 55, 95

Museums, European, Casts from, 55, 90-96

Musical Stones (*Chi Ching*), nephrite, reign of Ch'ien-lung, China, 211, 212

Mu Wang, ancient Chinese emperor, 198

Nadir Shah, break in Tamerlane's nephrite monolith said to have occurred in time of, 26

Immense booty of artistic treasures removed from Delhi by, 115

Napoleon III, jadeite bust of, 16

Model of jadeite bust of, 16

Jadeite block from which was sculptured bust of, 17

Naseah, aboriginal nephrite fighting-pick of Chimsian Indians, 54, 89

Use of, on important ceremonial occasions, 54, 89

Nass River, nephrite specimen said to come from Kit-Ax tribe on, 74

National Museum, United States. *See* United States National Museum

Natural History, American Museum of, 26

Natural History, Imperial Museum of, Vienna, 47, 55, 95

Neck-ornament (*Heitiki*), nephrite, worn by Maoris of New Zealand, 101

Neolithic Age, prehistoric objects belonging to, 57

Inhabitants of pile-dwellings on Lake Biene assigned to, 65

Nephelinite, Bauer finds mixture of jadeite, plagioclase, and, 18

Nephrite, specimens examined by Prof. Iddings with microscope found to consist of, 9

Formerly known as jade and not distinguished from jadeite, 15

A silicate of magnesia and lime, 15

Part of worked piece of, possibly from India, 18

Eighteen small pebbles of, from rivers of Khotan, 18, 19

Three small pebbles of, from Yürüngkash River, 19

Small fragment of, from K'un Lun Mountains, 20

Twenty-one pebbles of, from rivers of Khotan, 20, 21

Pebbles of, perforated for suspension probably in Peking, 21

Twenty-one pebbles of, diverse in coloring, 21, 22

Specific gravity and difficult fusibility of gray mineral indications of, 22

Minute scales and fibres of colorless amphibole entering into composition of, 22

Optical behavior of scales or fibres of, 22

Penetrated by hydrous oxide of iron from outside sources, 22

Pebble of normal, beautifully varied and bright in coloration, 22

Pebbles of, with lapidary's brush designs, 22

Section of block of, from quarry in K'un Lun Mountains, 23

Study of thin sections of, under microscope, 23

Muscovite and apatite remnants in rock metamorphosed to, 23

Section of water-worn boulder of translucent, 23

Presumably derived from jadeite, 23

Section of boulder of, from one of the jade-rivers of Khotan, 23

Thin fragment from exterior of water-worn weathered boulder of, 24

Tremolite a mineral close to, 24

Rough fragment of, said to have come originally from Turkistan, 24

Fragment of large block of, quarried in Khotan, 24

Cuboidal section of water-worn pebble of, 25

Very pale green intermingled with much darker green, 25

Compact horny structure of, 25

Small water-worn pebble of, showing scarcely any discoloration, 25

Fragment of water-worn boulder of, from Raskam Daria, 25

Part of boulder of, with naturally polished exterior, 25

Tiny fragment of, from great monolith on tomb of Tamerlane, 26

Portion of large water-worn boulder of, 26

Section of good-sized water-worn boulder of, 27

Veinings and markings of almost black, 27

Bands of an almost white, 27

Fragment of oblong medallion of, carved with dragons' heads, 27

Broken ornament of, worked in China from Turkistan material, 28

Fragment of oval medallion carved in, by Chinese from Turkistan material, 28

Occasional patches of compact, not fibrous, 28

Broken oblong medallion of, with incised Chinese inscription, 28

Part of decorated cover of jar fashioned by Chinese from Turkistan, 29

Four pebbles of, said to have been found in Liu Yang River, 29

Inclusions in, of another form of same mineral, 29

Section of rough boulder of, said to be from Ho-nan, China, 29

Characteristic reflections and compact, homogeneous texture of, 29

No exact knowledge of finding of, *in situ* in China, 29

Specimens of, labelled "China" probably product of Khotan or Yarkand, 29



Nephrite—*continued*

Section of slightly water-worn but much-weathered mass of, 30  
 Fragment of mass of compact and homogeneous, 30  
 Rough pebble of, said to be from Ho-nan but possibly from Turkistan, 30  
 Thick disc of, said to be from Ho-nan but possibly found in Turkistan, 30  
 Cut section of block of, probably from Turkistan, 31  
 Not known to occur *in situ* in province of Ho-nan, 31  
 Used by Chinese for numerous works of art in jade, 31  
 Outer slab of boulder of, possibly derived from Turkistan, 31  
 Long flattish boulder of, likely to have come from river of Turkistan, 31  
 Comparative tension test of specimen of, from New Zealand, 32  
 Part of boulder of, assigned to China but possibly from Turkistan, 32  
 Cylindrical core drilled in China from mass of, originating in Turkistan, 33  
 Broken surfaces of specimen showing splintery, horn-like structure of, 33  
 Oblong polished slab of, assigned to China but possibly from Turkistan, 33  
 Formed by amphibolical alteration of jadeite or pyroxene, 33  
 Section of boulder of, assigned to Yunnan but possibly from Turkistan, 33  
 Dark-green, of Manas, Barkul, and other parts of Chinese Turkistan, 33  
 Small rough fragment of primary, from Prof. Jaczewski, 34  
 Part of weathered and much abraded boulder of, from Siberia, 34  
 Section of small boulder of, from Chara-Jelga, Kitoi Alps, Siberia, 34  
 Rough fragment fractured out of boulder of, from Belaja River, 34  
 Fragment of large boulder of, from Siberia, 35  
 Small fragment of, cut from boulder found near Lake Baikal in Siberia, 35  
 Rough fragment of, taken by Jaczewski from Onot River in Siberia, 35  
 Small slab of, taken by Jaczewski from Chara-Jelga River, 35  
 Deposits of, described by Jaczewski as forming tremendous beds, 35, 37  
 Outer slab cut from weathered mass of, found in Siberia, 35  
 Large thin slab of beautifully translucent, obtained in Siberia, 36  
 Specimen of, presenting by transmitted light the appearance of a relief-map, 36  
 Rough fragment of primary, discovered by Jaczewski in Siberia, 36  
 Black metallic substance, apparently chromite, characteristic of, 36  
 Rough fragment of boulder of, with schistose structure, obtained in Siberia, 36  
 Thick section of boulder of, discovered in Onot River, Siberia, 36  
 Segment of boulder of, with part of original ferruginous skin still visible, 36  
 Fragment taken by Jaczewski from immense boulder of, on Onot River, 37  
 Large rough mass of, with two flat cut surfaces, obtained in Siberia, 37  
 Rough fragment of, with one polished face showing a beautiful grass-green, 37  
 Large weathered block of, with polished and unpolished surfaces, 37  
 Fragment of water-worn boulder of, showing color and homogeneous character, 37  
 Part of very thin slab of, cut from boulder discovered in Siberia, 38  
 Fractured fragment of translucent, taken from Onot River in Siberia, 38  
 Long, narrow section cut from near outer edge of boulder of Siberian, 38  
 Fragment of large boulder of translucent, with tough, horny structure, 38  
 Half of long boulder of Siberian, from which segment has been removed, 39  
 Section of water-worn boulder of Siberian, with almost polished outer surface, 39  
 Thick section of rough, weathered, and partly water-worn mass of Siberian, 39  
 Part of boulder of Siberian, with four cut faces, 39  
 Segment of much-weathered boulder of translucent, discovered in Siberia, 40  
 Truncated segment of boulder of, showing different degrees of water action, 40  
 Thick section of rough mass of Siberian, with two parallel polished faces, 40

Nephrite—*continued*

Specimens of, brought by Permikin from Siberia to St. Petersburg, 40  
 Cross-section of boulder of, from Wilna River in Siberia, 41  
 Oblong fragment of Siberian, with one polished and one rough weathered face, 41  
 Section of boulder of Siberian, very smooth in part and almost black, 41  
 Mammoth block of, discovered by Mr. George F. Kunz near Jordansmühl, 41  
 Fragments detached from huge block of, and subjected to various tests, 41, 42, 43  
 Transitions between actinolite prisms and fibre-bundles of, 42  
 Epidote or titanite believed to be recognized by Arzruni in specimens of, 42  
 Pyroxene found by Traube in, from Jordansmühl, 42  
 Several pieces of considerable size broken from huge block of, 43  
 Large broken fragment of, from Jordansmühl in Silesia, 43  
 Thin fragment of, resembling some forms from New Zealand, 44  
 Rough fragment of translucent, polished on one side, 44  
 Fractured specimen of, resembling New Zealand pouamu, 44  
 Fragment of rough mass of, showing surface of vein, 44  
 Section of crude block of, from Jordansmühl in Silesia, 45  
 Fragment of, found in the quarry at Jordansmühl, 45  
 Small fragment selected by Mr. Kunz from mammoth block of, 45  
 Crude fragment of, from Reichenstein in Silesia, 45  
 Small fragment of rock-mass of, mined at Reichenstein, 46  
 Rough fragment of, from Reichenstein, with one face showing saw-marks, 46  
 Crude fragment of, with one cut face, discovered in Reichenstein, 46  
 Beautiful specimen of, consisting of fibrous amphibole, 46  
 Fragment of block of, found in peat-bog of Schwemsal, 46  
 Specimen of, found in remains of pile-dwellings on Lake Neuchâtel, 47  
 Pebble of, found near mouth of Nooksak River in State of Washington, 47  
 Pebble of, found between Fraser and Thompson rivers in British Columbia, 47  
 Crude fragment of, found in vicinity of Jade Mountain in Alaska, 47, 48  
 Small rough weathered fragment of, from Alaska, 48  
 Fragment of, from Kotzebue Sound in Alaska, 49  
 Large water-worn pebble of, found in Sulphur Creek, Yukon, Canada, 49  
 Section of rough block of, obtained by Lieut.-Com. Stoney in Alaska, 49  
 Thin rectangular slab of, probably from New Zealand, 49  
 Small thin broken slab of highly translucent, from New Zealand, 50  
 Cross-section of irregularly shaped boulder of, found in New Zealand, 50  
 Part of thick cross-section of boulder of, found in New Zealand, 50  
 Resistance of New Zealand, to stresses of various kinds, 51  
 Angular fragment of, brought from New Zealand, 51  
 Part of broken slab of, discovered in New Zealand, 51  
 Rough fragment of, with one highly polished face, from New Zealand, 51  
 Small thin slab of very translucent, almost transparent, from New Zealand, 52  
 Small rectangular tablet of, with one polished face, from New Zealand, 52  
 Prehistoric and aboriginal implements of, 53, 54  
 Material of Alaskan jade objects always consists of, 54  
 Aboriginal weapons of, 54, 55, 89, 90  
 Proved to exist *in situ* in mountains at source of Mur River, 55, 91  
 Long flat hatchet wrought in, from New Zealand, 55  
 Large partly worked piece of spinach-green, from New Zealand, 56, 97  
 Aboriginal New Zealand pendant of grotesque design carved in, 56  
 Discovery of celts of clear, at low water on Lake Zürich, 57  
 Celts of, discovered in lake-dwellers' village of Robenhause, 57  
 Very tiny knife of, in holder, from lake-dwellings of Switzerland, 58  
 Thick flat hatchet, with holder, composed of mixture of jadeite, zoisite, and, 58  
 Wedge-shaped hatchet of, broken at upper end, from Lake Neuchâtel, Switzerland, 61

Nephrite—*continued*

Hatchet of, found among piles of ancient lake-dwellings in Switzerland, 61  
 Small hatchet of, good in outline and smoothed all over, 61  
 Hatchet of, narrow at top and wide at cutting edge, 61  
 Hatchet of, with smooth flat faces and stained sides, 62  
 Small thick broken hatchet of, with saw-marks on both sides, 62  
 Small narrow thick chisel of, ground to cutting edge from two faces, 63  
 Small thick chisel of, found among remains of ancient Swiss pile-dwellings, 63  
 Prehistoric knife of, found in pile-dwelling remains on Lake Neuchâtel, 64  
 Tiny knife of, found among remains of ancient pile-dwellings in Switzerland, 64  
 Knife of, with narrow head and much wider cutting edge, 64  
 Small knife of, found in remains of pile-dwellings on Lake Neuchâtel, 64  
 Prehistoric knife of, found among pile-dwelling remains of Lake Neuchâtel, 65  
 Small thick knife of, found in ancient pile-dwellings of Switzerland, 65  
 Knife of, with horn handle, found among remains of pile-dwellings near Lüscherz, 66  
 Hatchet of, much altered exteriorly, resembling anhydrous anthophyllite, 66  
 Specimens of, collected from prehistoric settlements in Lake Constance region, 66  
 Prehistoric hatchet of, from site of ancient pile-dwelling on Lake Constance, 66  
 Broken hatchet of, with straight sides and sharp curved cutting edge, 67  
 Knife of, smooth but not polished, from remains of pile-dwellings on Lake Constance, 67  
 Thin flat knife of, with almost crescent-shaped cutting edge, 68  
 Short thick knife of, smooth all over but not polished, from Alzonne, 69  
 Aboriginal gritstone used to cut grooves in, found at Lytton, British Columbia, 73  
 Aboriginal axe of, with straight, slightly chipped cutting edge, from British Columbia, 73  
 Aboriginal adze of, with slightly curving cutting edge, from British Columbia, 73  
 Long narrow hatchet of, found at east end of Noeola Lake, 73  
 Small flat hatchet of, with straight cutting edge and rounded sides, 74  
 Hatchet of, with curved cutting edge formed by grinding from both faces, 74  
 Hatchet of, tapering to head, which is much broken, from British Columbia, 74  
 Chisel of, uniform in width throughout its whole length, from British Columbia, 74  
 Short thick chisel of, broken at top, found in British Columbia, 75  
 Short knife of, with wide slanting cutting edge, from British Columbia, 75  
 Small wedge-shaped knife of, with flat faces, sides, and top, 75  
 Small knife of, with wide cutting edge in good condition, 75  
 Thick knife of, with wide cutting edge slightly notched and rounded sides, 75  
 Rough axe of, with undefined cutting edge at each end, from Alaska, 76  
 Large axe of, from Cape Prince of Wales, Alaska, 76  
 Rough axe of, with partly natural and partly ground cutting edge, 76  
 Partially wrought axe of, from Cape Prince of Wales, Alaska, 77  
 Adze of, with bone holder and handle, from Point Barrow in Alaska, 77  
 Adze of, with one flat and one bulging face and straight sides, 77  
 Aboriginal adze of typical Alaskan, 77  
 Adze of, set in roughly shaped walrus-bone handle, 78  
 Small aboriginal adze of, from Hotham Inlet in Alaska, 78  
 Well-formed adze of, with wide straight cutting edge, 78  
 Aboriginal small rough adze of, with wide straight cutting edge, 79  
 Broken adze probably of, much altered by action of heat, 79  
 Broken aboriginal adze of, with flat sides, 79  
 Rough adze of, with wide cutting edge ground from two faces, 79  
 Long narrow adze of, with straight cutting edge and pointed head, 79  
 Broken adze of, exhibiting original fractured surface and weathering, from Alaska, 80



Nephrite—*continued*

- Adze of, procured by Lieut. Emmons from Tlinkit people of Alaska, 80  
 Hatchet of, probably of Tlinkit origin, from Bering Sea coast of Alaska, 80  
 Thick hatchet of, with wide straight cutting edge, from Kotzebue Sound, 80  
 Fragment of hatchet of, from Sledge Island in Alaska, 80  
 Chisel of, with good cutting edge at lower end produced by grinding, 81  
 Very small knife of, probably used for engraving purposes, 81  
 Small knife of, smoothed on one face, intended for use in wood-carving, 81  
 Knife of, used for domestic purposes by native women of Alaska, 81  
 Small chisel-like knife of, with thickish body of irregular section, 81  
 Small knife of, with sharp edge at one end produced by grinding, 82  
 Long thin-bladed knife of, set in thick holder of wood, 82  
 Thin flat knife of, with cutting edge ground from both faces, 82  
 Knife of, in form of thin flat triangular slab, from Alaska, 82  
 Long finger-like piece of, used as knife-sharpener, 83  
 Relatively long, tapering piece of, used as knife-sharpener by Indians of Alaska, 83  
 Long knife-sharpener of, with slightly convex faces and rounded sides, 83  
 Knife-sharpener of, with perforation near the butt drilled from both faces, 83  
 Scraper of, mounted in decorated handle of reindeer-horn, 84  
 Scraper of, mounted in handle intended to be held in right hand, 84  
 Scraper or skin-dresser of, consisting of blade broken into shape, 84  
 Pick or root-digger of, from Point Barrow, Alaska, 84  
 Harpoon-head of, set in shank of walrus-bone, 85  
 Hand-pestle of, from northwest coast of Alaska, 85  
 Axe of, sawn from boulder and smoothed by grinding, 85  
 Adze of, with sharp cutting edge produced by grinding from both faces, 85  
 Hatchet of, ground smooth on one face and on lower part of other, 86  
 Chisel of, with rounded pentagonal form and short dull cutting edge, 86  
 Knife of, pierced at upper end for suspension, 86  
 Broad axe of, with convex faces, crescent-shaped cutting edge, and narrow head, 86  
 Very flat axe of, with one side longer than the other, 87  
 Adze of, made entirely by grinding rough piece of raw material, 87  
 Small hatchet of, with regular outline and crescent-shaped cutting edge, 87  
 Two longitudinal sections of hatchet of, illustrating methods of prehistoric lapidary, 87  
 Axe of, with wide crescent-shaped cutting edge, convex faces, and thin sides, 88  
 Axe of, with lengthened form and convex sides tapering to rough point, 88  
 Hatchet of, with convex sides tapering upward to irregularly rounded point, 88  
 Long narrow axe of, with crescent-shaped cutting edge and slightly curved faces, 88  
 Flat hatchet of, smoothed all over, with straight cutting edge, 89  
 Thin cleaver-shaped cutting-implement of, perforated near one end, 89  
 Cast of small thin rolled pebble of, from river Sann, 90  
 Cast of rolled pebble of, found at entrance to Lazareth-gasse, Gratz, Styria, 91  
 Long hatchet of, with flat faces and curved cutting edge, 95  
 Chariot-wheel nave of, from China, 103  
 Chinese tablet of rank consisting of, 104  
 Chinese sacrificial tablet of, 104  
 Pierced medallion of, China, 105  
 Archaic celt of, China, 105  
 Tassel-slide of, China, 105  
 Ornamented celt of, China, 106  
 Decorated celt of, China, 106  
 Small celt of, China, 106  
 Amulet of, in form of celt, China, 107  
 Large flat gong of, China, 107  
 Chinese libation-cup of, dating from Han dynasty, 108  
 Armlet of, Han dynasty, China, 108  
 Archer's thumb-ring of, Han dynasty, China, 109  
 Signet of, Han dynasty, China, 109  
 Girdle-ornament of, Han dynasty, China, 109  
 Two square seals of, Han dynasty, China, 110  
 Horn-shaped cup of, dating from Tang dynasty, China, 110

Nephrite—*continued*

- Lotus-leaf cup of, Tang dynasty, China, 110  
 Lotus-leaf vase of, about thirteenth century, China, 111  
 Girdle-appendage of, about thirteenth century, China, 111  
 Wine-pot of, early Ming dynasty, China, 111  
 Sacrificial vessel of, period unknown, China, 112  
 Engraved celt of, period unknown, China, 112  
 Three signets of, period unknown, China, 112  
 Wine-cup of, period unknown, China, 113  
 Sacrificial vessel of, early Ming dynasty, China, 113  
 Bell of, Han dynasty, China, 117  
 Brush-pot of, supposed to be of Sung dynasty, China, 117  
 Perforated medallion of, Sung dynasty, China, 117  
 Wine-jug of, probably dating from before Ming dynasty, China, 118  
 Artist's water-dish of, Ming dynasty, China, 122  
 Bowl of, with two dragon-handles, Ming dynasty, China, 123  
 Square vase of, Ming dynasty, China, 124  
 Double-cylinder vase of, Ming dynasty, China, 124  
 Pendant of, Ming dynasty, China, 125  
 Writers' hand-rests of, Ming dynasty, China, 125, 136  
 Girdle-buckles of, Ming dynasty, China, 125, 126  
 Pair of peaches carved in, Ming dynasty, China, 126  
 Figure of crab carved in, Ming dynasty, China, 126  
 Screen of, Ming dynasty, China, 126  
 Small screen of, Ming dynasty, China, 127  
 Large dish of, Ming dynasty, China, 127, 128  
 Large and small figures of lions in, Ming dynasty, China, 128  
 Water-receptacles of, Ming dynasty, China, 128, 135  
 Small vase of, Ming dynasty, China, 128  
 Rectangular vase of, Ming dynasty, China, 129  
 Miniature figure of, Ming dynasty, China, 129  
 Miniature loving-cup of, Ming dynasty, China, 129  
 Medallions of, Ming dynasty, China, 129, 131  
 Pen-rests of, Ming dynasty, China, 130  
 Ornamental knobs of, Ming dynasty, China, 130, 131  
 Incense-burner of, Ming dynasty, China, 131  
 Quadrangular vase of, Ming dynasty, China, 131  
 Elephant of, Ming dynasty, China, 132  
 Flower vase of, Ming dynasty, China, 132  
 Paper-weight of, Ming dynasty, China, 132  
 Grotesque monster with vase of, Ming dynasty, China, 133  
 Miniature flower vase of, Ming dynasty, China, 133  
 Wine-cup of, Ming dynasty, China, 133  
 Deep flat-bottomed dish of, Ming dynasty, China, 134  
 Chains of, Ming dynasty, China, 134  
 Bowl carved from, Ming dynasty, China, 135  
 Six table-spoons of, Ming dynasty, China, 136  
 Double flower vase of, Ming dynasty, China, 136, 137  
 Temple figure of, Ming dynasty, China, 137  
 Seal of, Ming dynasty, China, 137  
 Pair of bowls of, Ming dynasty, China, 138  
 Pair of dishes of, Ming dynasty, China, 138  
 Figure of dove carved in, Ming dynasty, China, 138  
 Snuff-bottle of, Ming dynasty, China, 139  
 Small beaker-like vase of, Ming dynasty, China, 139  
 Incense-burner of, Ming dynasty, China, 139  
 Objects of, referred to reign of Kang-hsi, China, 143-158  
 Objects of, referred to reign of Yung-ch'eng, China, 158, 159  
 Objects of, referred to reign of Ch'ien-lung, 160, 173-234, 236, 237, 238, 244-246  
 Book consisting of tablets of, 173 (see also *note*)  
 Frame with mirror carved in, 204  
 Objects of, referred to reign of Chia-ch'ing, 234-236, 241, 242, 247, 248  
 Objects of, referred to different periods in India, 248-256, 257-260  
 Ink-pallet and water-horn of, from Annam, 263, 264  
 Objects carved in France from New Zealand variety of, 264-266  
 Objects made of Siberian, in St. Petersburg, Russia, 266  
 Pendants or ear-drops made of New Zealand variety of, 267  
 Netsuké, nephrite and jadeite objects intended to be worn like Japanese, 177  
 Neuchâtel, Lake. See Lake Neuchâtel  
 Neues Jahrbuch für Mineralogie, 16, 42  
 New Caledonia, aboriginal jade implements and tools from, 53, 54  
 Large battle-axe from, with blade wrought out of spinach-green nephrite, 55, 90  
 Nephrite axe, with wide crescent-shaped cutting edge and convex faces, from, 88  
 New Guinea, aboriginal jade implements and tools from, 53, 54  
 Jade implements attributed to New Zealand and, 55  
 Small aboriginal jade celt or hatchet brought from northeast coast of, 55, 95

New Guinea—*continued*

- Nephrite axe, of lengthened form with convex tapering sides, from, 88  
 Nephrite hatchet, with convex sides tapering upward to irregularly rounded point, from, 88  
 Cast of small thick jadeite (?) hatchet, with tapering round head, from, 95  
 New Jersey, diabautite from, 15  
 New York, American Museum of Natural History in, 26  
 New Zealand, piece of Tamerlane's nephrite monument resembles specimens from, 26  
 Comparative tension test of nephrite specimen from, 32  
 Thin nephrite fragment from Jordansmühl resembling some forms from, 44  
 Fractured nephrite specimen resembling pounamu of, 44  
 Thin rectangular nephrite slab probably from, 49  
 Small thin broken slab of highly translucent nephrite from, 50  
 Cross-section of irregularly shaped nephrite boulder found in, 50  
 Part of thick cross-section of nephrite boulder from, 50  
 Resistance of nephrite from, to stresses of various kinds, 51  
 Angular fragment of nephrite brought from, 51  
 Part of broken nephrite slab discovered in, 51  
 Rough nephrite fragment from, with one highly polished face, 51  
 Small thin slab of very translucent, almost transparent nephrite from, 52  
 Small rectangular tablet of nephrite, with one polished face, from, 52  
 Aboriginal jade implements and tools from, 53, 54  
 Finely polished war-club of dark ivy-green nephrite from, 54, 90  
 Jade implements attributed to New Guinea and, 55  
 Large partly worked piece of spinach-green nephrite from, 56, 97  
 Aboriginal nephrite pendant of grotesque design from, 56  
 Peculiar substance and color of many specimens of jade from, 68  
 Gritstones used by natives of, in working jade, 73  
 Nephrite broad axe, with convex faces and crescent-shaped cutting edge, from, 86  
 Very flat nephrite axe, with one side longer than the other, from, 87  
 Nephrite adze, made entirely by grinding rough piece of raw material, from, 87  
 Small nephrite hatchet, of regular outline, with crescent-shaped cutting edge, from, 87  
 Two longitudinal sections of nephrite hatchet from, 87  
 Long flat nephrite hatchet considered by Dr. Obst to come from, 95  
 Aboriginal nephrite heitiki (neck-ornament) from, 101  
 Classification of jade objects from, 116  
 Profile portrait of Heber Reginald Bishop executed upon nephrite from, 264  
 Various objects carved in nephrite from, 265, 266  
 Pendants or ear-drops made of nephrite in, 267  
 New Zealand Institute, Transactions of, 87, 90, 101  
 Nickel Protoxide, percentages of, in specimens, 26, 40, 41, 43  
 Nirvāna, abstruse dogma of, 202  
 Buddha enthroned in, 215  
*Niu-tzu* (Chinese). See Button and Girdle-appendage  
 Ni Yün-lin, celebrated Chinese landscape-painter, 186 (see also *note* 1)  
 Nocola Lake, long narrow nephrite hatchet found in grave at east end of, 73  
 Noetling, Dr. Fritz, specimens of crude jade collected by, 3  
 Discovery and description of jade-mines of Upper Burma by, 10  
 Declaration of, affirming absence of jade *in situ* in Yunnan, 10  
 Nooksak River, nephrite pebble found by Harlan S. Smith near mouth of, 47  
 North Island, jade axe once the property of noted Maori chief of, 54, 87  
 North Pacific Expedition of 1897 (Jesup), 47, 53, 73  
*Nuan Shou* (Chinese). See Hand-rests  
 Numbers of Specimens. See Arabic figures in left margin of Catalogue  
 Nur-ed-din, Emperor of Annam, 261  
 Nuttall, Mrs. Zelia, cast of Leyden Plate presented to Collection by, 96  
 Mortuary custom of ancient Mexicans mentioned by, 105 (*note* 2)  
 Oaxaca, small jadeite idol found in mound south of, 101  
 Ober Meilen, piles and other remains observed in 1829 at, 56  
 Objects, Art, of Jade, 114 *et seq.*



- Obsidian, splinters of, found in forest of Lengyel, Tolna, Hungary, 47
- Obst, Dr., on colors of jadeite specimens, 93
- Opinion of, regarding origin of long flat nephrite hatchet, 95
- Ocotlan, small jadeite idol found in mound near, 101
- Ogre, storm or gluttonous (Chinese *t'ao-tieh*), 105, 106, 107, 112, 113, 118, 124, 129, 132, 139, 143, 166, 200, 235
- Oldenburg, east of large flat chloromelanite hatchet from, 92
- Oldenburg, Grand Ducal Museum at, 92
- Oligoclase-albite, composition of, 5
- Onot (or Ospa) River, rough nephrite fragment taken by Prof. Jazewski from, 35
- Outer slab cut from weathered nephrite mass found in, 35
- Thick section of weathered and water-worn nephrite boulder obtained in, 36
- Large fragment taken by Prof. Jazewski from immense nephrite boulder on, 37
- Fragment of water-worn nephrite boulder, beautifully showing color, taken from, 37
- Fractured fragment of translucent nephrite taken from, 38
- Long, narrow section cut from nephrite boulder discovered in, 38
- Thick section of rough, weathered, and partly water-worn nephrite mass from, 39
- Oblong nephrite fragment from, with one polished and one rough weathered face, 41
- Orchid Pavilion, or Lan T'ing, 223
- Order of Casts, from European museums, 55
- Origin of Jadeite (Prof. Pirsson), 18
- Oripendula, curious trumpet-shaped jadeite ear-ornaments worn by ancient Mexicans, 56
- Ornament, broken nephrite, of Chinese workmanship, 28 (*P'ai-tzu*), nephrite, reign of Ch'ien-lung, China, 184
- Ospa River. *See* Onot River
- Oxide, Manganous. *See* Manganous Oxide
- Oxide of Iron, stain apparently due to hydrous, 5
- Staining caused by deposition of brown hydrous, 6
- Section of boulder stained by hydrous, 7
- Staining due to infiltration of hydrous brown, 15, 19
- Dead-oak-leaf color due to coating of hydrous, 17
- Incrustation of brown hydrous, 18
- Superficial stainings due to hydrous, 19
- Nephrite pebbles discolored by hydrous brown, 21
- Nephrite pebbles stained by infiltration of brown, 22
- Dendritic growths of, 22
- Nephrite penetrated by hydrous, 22
- Fissures infiltrated with brown hydrous, 25
- Former vein in nephrite boulder permeated by hydrous, 25
- Fractures containing stains of brown, 29
- Nephrite boulder stained exteriorly dead-oak-leaf color by action of, 29
- Yellowish-brown tabular mineral which appears to be hydrous, 29
- Surface of nephrite mass stained dead-oak-leaf color through contact with, 30
- Exterior of mass of compact and homogeneous nephrite stained by, 30
- External staining of nephrite through infiltration of hydrous, 30
- Thick nephrite disc stained by infiltration of hydrous, 30
- Surface of nephrite block altered to dead-oak-leaf color by, 31
- Lower flat face of nephrite core showing discoloration due to, 33
- Section of nephrite boulder containing deposits of earth and hydrous, 33
- Pyrite or pyrrhotite partly altered to brown hydrous, 34
- Rough surface of nephrite slab stained by contact with hydrous, 35
- Inclusions of dendritic mineral identified as either oxide of manganese or, 38
- Percentage of, in specimen, 104
- Oxide of Manganese, fibres of black metallic substance perhaps consisting of, 19
- Nephrite boulder with mottlings possibly due to contact with, 37
- Inclusions of dendritic mineral identified as either oxide of iron or, 38
- Pacific, North. *See* North Pacific
- Page, Logan Waller, impact tests by, 42, 51
- Paintings, Catalogue of Japanese and Chinese, in British Museum, 200
- P'ai-tzu* (Chinese). *See* Amulet, Disc, Medallions, Ornament, Pendant, Pendants, Plaque, Plaques, and Stork
- Palaeolithic Age, primitive savagery of, 57
- Pallet, double-gourd (*Hu-lu Yen-tai*), of jadeite, reign of K'ang-hsi, China, 140
- Pamir Region, Raskam Daria lies on eastern side of, 25
- Pamirs, Eastern. *See* Eastern Pamirs
- P'an* (Chinese). *See* Dishes
- Pan-ch'an Erdeni Lama, Grand Lama of Ta'shi-lunpho, 173 (see also *note*)
- Pan Chih* (Chinese). *See* Thumb-ring and Thumb-rings
- P'ang-hsieh* (Chinese). *See* Crab
- P'an-tzu* (Chinese). *See* Dishes
- Paper-knife, nephrite, executed in Paris, 265
- Paper-weight (*Shu Chên*), nephrite, Ming dynasty, China, 132
- (*Chên Chih*), nephrite, reign of Ch'ien-lung, China, 178
- Nephrite, made in St. Petersburg, 266
- Paper-weights (*Shu Chên*), jadeite and nephrite, reign of Ch'ien-lung, China, 169, 175, 176, 177, 180, 183, 184, 215, 238
- Paris, string of jadeite beads obtained by Prof. Damour of, 15
- Many jade specimens brought to, 15
- Small square jadeite slab presented to Collection by Prof. Damour of, 16
- M. Berquin noted lapidary of, 16
- Small thin slab of very dark jadeite presented to Collection by Prof. Damour of, 18
- Small chloromelanite hatchet presented to Collection by Prof. Damour of, 57
- Jade objects removed by French from Hué in Annam to, 116
- Jadeite statuette copy of Venus de Milo executed in, 264
- Profile portrait of Heber Reginald Bishop executed upon nephrite in, 264
- Round nephrite bonbonnière executed in, 265
- Nephrite scent-bottle made in, 265
- Very finely polished nephrite armlet made in, 265
- Finely polished rectangular nephrite bar cut in, 266
- Paris Exposition of 1867, jadeite bust of Napoleon III shown at, 16, 17
- Paris International Exposition of 1900, 116
- Pavilion, Reed and Orchid, 209 (see also *note* 1)
- Pavilion of Mist and Rain, 186 (see also *note* 4)
- Peabody Museum at Harvard University, human teeth encrusted with jadeite in, 56, 101
- Prehistoric Mexican jadeite ear-ornament in, 99
- Peaches, pair of nephrite (*Shuang T'ao*), Ming dynasty, China, 126
- Pebble, east of small thin rolled nephrite, found in bed of river Sann, 90
- Cast of rolled nephrite, found at entrance to Lazareth-gasse, Gratz, Styria, 91
- Pei* (Chinese). *See* Cup
- Pei* (Chinese). *See* Girdle-ornament
- P'ei Ching* (Chinese). *See* Amulet
- Pei Hu P'ing* (Chinese). *See* Pilgrim-bottles and Vases with covers
- Peking, section of boulder procured for Collection by Dr. Bushell of, 6
- Jadeite specimen secured in, 7
- Looting of Summer Palace near, 15, 117, 120, 123, 124, 132, 140, 141, 142, 147, 156, 157, 170, 193, 195, 196, 204, 209, 226, 227, 243
- Nephrite pebbles perforated for suspension probably in, 21
- Nephrite pebbles obtained by Dr. S. W. Bushell in, 21
- Section of boulder of translucent nephrite secured by Dr. Bushell in, 23
- Section of water-worn nephrite boulder obtained by Dr. Bushell in, 23
- Cuboidal section of water-worn nephrite pebble obtained by Dr. Bushell in, 25
- Small water-worn nephrite pebble obtained by Dr. Bushell in, 25
- Part of nephrite boulder procured by Dr. Bushell in, 25
- Fischer's theory supported to some extent by statement of T'ang Jung-tso of, 26
- Nephrite block obtained by Dr. Bushell in, 26
- Section of good-sized nephrite boulder procured for Collection by Dr. Bushell in, 27
- Description of nephrite specimen obtained at, by Dr. Bushell, 33
- Imperial jade workshops in palace at, 115
- Peking, Metropolitan Lama of, 174 (*note* 1)
- P'ên* (Chinese). *See* Dish
- P'ên Ching* (Chinese). *See* Dish, Dishes, and Pots
- Pendant, small ornamental Chinese, of jadeite, 14
- Portion of Chinese ornamental, 14
- (*Heitiki*), of grotesque design, carved in New Zealand nephrite, 56
- Discovery of prehistoric, on Mount Tacana in Guatemala, 56
- (*Kapehu*), large claw-shaped aboriginal, of spinach-green nephrite, from New Zealand, 116
- (*P'ai-tzu*), jadeite, referred to Ming dynasty in China, 119
- (*P'ai-tzu*), nephrite, assigned to Ming dynasty in China, 125
- (*P'ai-tzu*), nephrite, reign of Yung-chêng, China, 158
- Pendants (*P'ai-tzu*), jadeite and nephrite, reign of Ch'ien-lung, China, 168, 173, 181, 182, 183, 184, 236, 243
- Jewelled nephrite, nineteenth century, India, 259
- Nephrite, nineteenth century, New Zealand, 267
- See also* Ear-drop
- Penfield, Prof., reduction of chemical analysis by, 4
- Jadeite determined by, to belong to monoclinic system of crystallization, 16, 17
- Results of Walden's analysis, with reduction by, 34
- Reduction by, of Walden's analysis of New Zealand nephrite, 51
- Material of hatchet pronounced to be mixture of glaucophane, epidote, and quartz by, 58
- Chemical constitution of jadeite-nephrite-zoisite specimen carefully studied by, 58
- Walden's analysis of material of nephrite hatchet calculated by, 62
- Results of chemical analysis by Walden, with reduction by, 71
- Reduction of Walden's analysis of small Mexican jadeite mask by, 98
- Pennine, colorless mica-like mineral with optical properties of, 63
- Pen-rests (*Pi Ko*), nephrite, Ming dynasty, China, 130
- Perfume-receptacles (*Hsiang K'ou-tai*), nephrite, reign of Ch'ien-lung, China, 207
- Permikin, Russian mine-owner and explorer, nephrite specimens brought to St. Petersburg by, 40
- Persia, immense booty of artistic treasures removed from Delhi to, 115
- Peterhof, Permikin sent in search of nephrite for stone-cutting establishment at, 40
- Peterhof, Imperial Lapidary at. *See* Imperial
- Pfäffikon, Lake. *See* Lake Pfäffikon
- Phenix, Chinese (*Feng-huang*), fabulous bird of wondrous form and majestic nature, 129, 145
- (*Feng-huang*), small nephrite plaque delicately carved in form of, 177
- Pi* (Chinese). *See* Medallion and Medallions
- Pick, long flat-faced piece of nephrite, with rounded tapering sides, used as, 84
- Pierolite, serpentine-like mineral resembling, 45
- Piedras de hijadas (Jade stones), Nicolas Monardes on, 56
- Pien Hua Ku* (Chinese). *See* Beaker
- Pi Hsi* (Chinese). *See* Dish and Water-dishes
- Pi Ko* (Chinese). *See* Pen-rests
- Pile-dwellings, nephrite specimen found in remains of, on Lake Neuchâtel, 47
- Prehistoric jadeite hatchet found among remains of, in Switzerland, 56
- Discovery of ruins of, in Swiss lakes, 56, 57
- Objects found among remains of ancient, 57
- Thick flat jadeite-nephrite-zoisite hatchet, with holder, found in remains of, 58
- Small jadeite hatchet found among remains of ancient, near Yverdon, 59
- Prehistoric jadeite hatchet found among remains of ancient, in Switzerland, 59
- Small flat jadeite hatchet, with straight cutting edge, from ancient Swiss, 59
- Jadeite hatchet, with slightly curved faces and flat sides, from Swiss, 60
- Small flat chloromelanite hatchet found in remains of, in Switzerland, 60
- Wedge-shaped nephrite hatchet, broken at upper end, found in Swiss, 61
- Nephrite hatchet, of usual form, found in remains of, in Switzerland, 61
- Nephrite hatchet, with smooth flat faces and stained sides, from Swiss, 62
- Small thick broken nephrite hatchet found in ancient, of Switzerland, 62
- Small narrow thick nephrite chisel found among remains of, in Switzerland, 63
- Small thick nephrite chisel found among remains of ancient Swiss, 63
- Long thick jadeite chisel found in ancient, of Lake Neuchâtel, Switzerland, 63



Pile-dwellings—*continued*

- Prehistoric nephrite knife found in remains of, on Lake Neuchâtel, Switzerland, 64  
Nephrite knife, with narrow head and wider cutting edge, found in Swiss, 64  
Small nephrite knife found in ancient, of Lake Neuchâtel, Switzerland, 64  
Prehistoric nephrite knife found among remains of, on Lake Neuchâtel, 65  
Jadeite knife found among remains of ancient, on Lake Neuchâtel, Switzerland, 65  
Small thick nephrite knife found among remains of, in Switzerland, 65  
Jadeite knife, with horn handle, found among remains of, at Lüscherz, 65  
Small nephrite cutting-implement found in remains of ancient, near Lüscherz, 66  
Nephrite hatchet found among remains of ancient, on Lake Constance, 66  
Prehistoric nephrite hatchet from site of ancient, on Lake Constance, 66  
Jadeite hatchet found among remains of ancient, near Wallhausen, Lake Constance, 67  
Nephrite knife from remains of ancient, on Lake Constance, 67  
Thin flat nephrite knife found among remains of, at Bodmann, 68  
*See also* Lake-dwellings  
Pilgrim-bottles (*Pei Hu P'ing*), nephrite, reign of Ch'ien-lung, China, 194, 195, 196, 220  
Pillow, Baby (*Wa-wa Chên*), of jadeite, reign of K'ang-hsi, China, 141  
*P'ing* (Chinese). *See* Vases  
Pipe-mouthpiece (*Yen-tung Tsui*), jadeite, Chia-ch'ing to Kuang-hsü, 239  
Pirsson, Prof. L. V., mixture of jadeite, plagioclase, and nephelite fully discussed by, 18  
*Pi Tung* (Chinese). *See* Brush-holders and Brush-pot  
*Pi Yen-Hu* (Chinese). *See* Snuff-bottle and Snuff-bottles  
Pi-yü (Moss-jade), Chinese name for a green variety of jade, 26  
Yun Pi Yü (Yunnan moss-green jade) distinguished from, 33  
Plagioclase, Bauer finds mixture of jadeite, nephelite, and, 18  
Plaque, oval (*P'ai-tsü*), of nephrite, reign of K'ang-hsi, China, 158  
Ornamental (*Ch'a P'ing*), of nephrite, reign of Ch'ien-lung, China, 180  
Circular (*P'ai-tsü*), of nephrite, reign of Ch'ien-lung, China, 180  
Oblong (*Tai Pan*), of nephrite, reign of Ch'ien-lung, China, 182  
Plaques, oblong (*P'ai-tsü*), of nephrite, reign of Ch'ien-lung, China, 174  
Plate, jadeite (*Tieh-tsü*), reign of Ch'ien-lung, China, 163  
Jewelled nephrite, seventeenth century, India, 254  
Plume-holder (*Mao Kuan*), jadeite, reign of Ch'ien-lung, China, 169  
(*Ling Kuan*), nephrite, Chia-ch'ing to Kuang-hsü, 241  
*Po* (Chinese). *See* Buddhist Bowl  
Point Barrow, nephrite adze, with bone holder and handle, from, 77  
Nephrite pick or root-digger from, 84  
Po Ku Tou, Chinese illustrated catalogue of ancient bronzes, 224  
Polu, jade reported found in country south of, 17  
Porcelain, Chinese, Dr. Bushell's pamphlet on, 140  
Port Clarence, aboriginal nephrite adze procured from Eskimos at, 78  
Posen, cast of small flat chloromelanite hatchet from, 92  
Potash (or Potassa), percentages of, in specimens, 4, 7, 8, 12, 14, 17, 23, 24, 26, 27, 32, 33, 34, 40, 41, 43, 45, 49, 51, 58, 59, 60, 61, 62, 71, 88, 98, 106, 118  
Potassa. *See* Potash  
Pots with plants (*P'ên Ching*), nephrite, reign of Chia-ch'ing, China, 247, 248  
Pounamu, fractured nephrite specimen resembling, of New Zealand, 44  
Maori meré (war-club) made from different varieties of, 54, 55, 90  
Powell, Dr. J. W., aboriginal nephrite fighting-pick obtained from Chimsian Indians by, 54, 89  
Po Yi. *See* Tai Kung  
Prajnatarā, twenty-seventh Buddhist patriarch, 230  
Prehistoric Man, nephrite pebble affording naturally shaped hatchet for use of, 22  
Prestwich, Geology, 266  
Prince of Wales, Cape. *See* Cape Prince of Wales  
Proceedings of American Antiquarian Society, 96

- Provincial Museum at Treves, 92  
Provincial Museum at Trier, Germany, 93  
Prussia, prehistoric flat hatchets found in, 92  
Prussian Saxony, fragment of nephrite block found in peat-bog of Schwemsal in, 46  
Putnam, Prof. F. W., historic nephrite fragment added to Collection through courtesy of, 26  
Puylaurens, prehistoric jadeite hatchet, with rounded cutting edge, found at, 69  
Pyrite, included mass of what is apparently, 34  
*See also* Pyrrhotite  
Pyroxene, twinning-plane observed in, 3  
Readily discernible outlines of crystals of, 4  
Entirely isolated crystals of, 4  
True character of, exhibited under microscope, 4  
Irregularly shaped crystals of nearly colorless, 4  
Colorless mineral acting as matrix for crystals of, 4  
Difference of, from aegirite, 4  
Large and small irregular crystals of, 7  
Amphibole or actinolite needles with lower index of refraction than, 7  
Pronounced prismatic cleavage of, 10  
Well-defined crystals of, in translucent jadeite material, 14  
Form of, changed by dynamical action, 15  
Jadeite a member of group known as, 15  
Jadeite specimen shown to belong to group known as, 16  
Crystals similar in form to those of, 17  
Colorless mineral with outline like that of, 17  
Nephrite probably formed from previous crystals of, 22  
Areas of nearly parallelly oriented scales showing position of former crystals of, 22  
Patches derived from a previous, 28  
Twinned position of lamellae of, 29  
Patches corresponding to originally twinned, 32  
Nephrite specimen suggesting grain of original, 32  
Nephrites formed by amphibolical alteration of, 33  
Found by Traube in nephrite from Jordansmühl, 42  
Pyrrhotite, nephrite containing crystals probably of, with metallic, somewhat brownish lustre, 51  
*See also* Pyrite  
Quartz, colorless mineral with same double refraction as, 41  
Quartzite, nephrite boulder similar in general appearance to boulder of, 27  
Rangoon, large quantity of jadeite imported into Marseilles from, 18  
Raskam Daria, Tunga River a tributary of, 24  
Fragment of water-worn nephrite boulder from, 25  
Situated on eastern side of Pamir region, 25  
Read, C. H., on prehistoric flint weapons, 102  
Reed and Orchid Pavilion, 209 (see also *note* 1)  
Reichenstein, crude fragment of nephrite from, 45  
Small fragment of nephrite rock-mass mined at, 46  
Rough nephrite fragment from, with one face showing saw-marks, 46  
Arsenopyrite characteristic of material from, 46  
Crude nephrite fragment, with one cut face, discovered in, 46  
Arsenopyrite a characteristic accompaniment of jade in, 46  
Relief-map, nephrite specimen presenting by transmitted light the appearance of, 36  
Resistance Tests, 4, 5, 23, 27, 32, 40, 42, 51  
Rhodo-nephrite, prehistoric knife of, broken at one end, from Maurach, 67  
Rice-bowls (*Fan Wan*), pair of nephrite, reign of Ch'ien-lung, China, 233  
Riebeckite, molecules of, 45  
Ring-box, nephrite, seventeenth century, India, 249, 250  
Rishi (Taoist genii or hermits), figures of, 226, 227  
Ritual of Chou Dynasty, 104  
Rivers. *See* the various qualifying names  
Robenhausen, discovery of prehistoric objects at, 57  
Rosgarten Museum at Constance, excavations carried on for curator of, 66  
Name *rhodo-nephrite* first applied by curator of, 67  
Royal Museum at Cassel, Prussia, 91  
Russia, objects made of Siberian nephrite in, 266  
Rutile, nephrite showing inclusions of brownish mineral resembling, 40  
Nephrite containing long and slender crystal, possibly of, 51  
Saarburg, long thick jadeite (?) hatchet from, 93  
St. Aubin, relics of stone age discovered at, 59

- St. Julian, prehistoric jadeite hatchet, entirely hammered into shape, found at, 70  
Small jadeite hatchet, with slightly curved cutting edge, found at, 70  
Small thick jadeite hatchet, with slightly curved cutting edge and bulging faces, from, 70  
Relatively long narrow jadeite hatchet, with slightly curved edge, found at, 70  
St. Peter, Cilli, nephrite pebble said to have been found in Sann near, 55, 90  
St. Petersburg, fragment of nephrite boulder presented to Collection by Muschketow of, 24  
Piece of water-worn nephrite boulder presented to Collection by Muschketow of, 25  
Fragments of Tamerlane's nephrite monolith obtained by Muschketow of, 26  
Primary nephrite received from Prof. Jaczewski of, 34  
Jade discovered *in situ* in Siberia by Prof. Jaczewski of, 35  
Rough fragment of primary nephrite presented to Collection by Jaczewski of, 86  
Specimen from immense nephrite boulder presented to Collection by Jaczewski of, 37  
Nephrite specimens brought by Permikin from Siberia to, 40  
Oblong nephrite fragment presented to Collection by Prof. Jaczewski of, 41  
Jade fashioned into vases and other artistic shapes in imperial lapidary works at, 116  
Objects made of Siberian nephrite in, 266  
St. Petersburg, Imperial School of Mines at, 35  
St. Petersburg, Mining Institute at, 26  
St. Petersburg Academy of Sciences, 266  
St. Petersburg Museum, celebrated mammoth in, 266  
Sajan Mountains, Manas situated about half-way between Khotan and, 26  
Nephrite discovered *in situ* by Jaczewski in, 26  
Sakyamuni Buddha. *See* Buddha  
Samarkand, nephrite monolith on tomb of Tamerlane (Timur) in Gur-Emir mosque at, 26  
Visited by Prof. Barbot de Marigny in 1874, 26  
Visited by Muschketow in 1879, 26  
Great monolith of Tamerlane (Timur) at, said to have come from Manas, 26  
*San Hsi Ting* (Chinese). *See* Tripod  
Sann River, nephrite pebble said to have been found in bed of, 55, 90  
*San Shê* (Chinese). *See* Altar Sets  
Satin-spar, compact and finely fibrous patches giving reflections like, 34  
"Sattelberg," aboriginal jade celts and similar specimens collected by German naturalist on, 54, 88  
Saucer Dishes (*Tieh-tsü*), pair of jadeite, reign of Ch'ien-lung, China, 169  
Saucers. *See* Cups  
Savoy, discovery of prehistoric objects in, 57  
Saxe-Weimar, thin flat jadeite (?) hatchet found in, 93  
Long flat jadeite hatchet from, 94  
Saxony, Prussian. *See* Prussian Saxony  
Scabbard, part of nephrite, with iron ring attached, 18  
Scene, Mountain (*Shan-tsü*), of nephrite, reign of K'ang-hsi, China, 156  
(*Shou Shan*), of nephrite, reign of Ch'ien-lung, China, 175  
Scent-bottle, nephrite, made in Paris, 265  
Sceptre (*Ju-i*), nephrite, reign of K'ang-hsi, China, 147  
Jewelled nephrite, eighteenth century, India, 257, 258  
Sceptres (*Ju-i*), jadeite, reign of Ch'ien-lung, China, 163, 164, 172, 243  
Schist, small silver-gray particles of foliated talcose, 43  
Schlagintweit, Hermann von, nephrite fragment brought from K'un Lun Mountains by, 20  
Schlagintweit (the brothers), reliable information by, on occurrence of jade in K'un Lun Mountains, 20  
Schmidt, Col., artist's jade brush-holder found in Chinese emperor's Summer Palace by, 223  
Schneidermann, analysis of glaucophane by, 59  
School of Mines, Imperial, at St. Petersburg, 35  
Schwemsal, fragment of smooth polished nephrite block found in peat-bog of, 46  
Scraper, nephrite, mounted in decorated handle of reindeer-horn, 84  
Nephrite, mounted in horn handle intended to be held in right hand, 84  
Nephrite, consisting of blade broken into shape, ground, and wedged into holder, 84  
Screen (*Ch'a P'ing*), nephrite, Ming dynasty, China, 126  
(*Ch'a P'ing*), small nephrite, Ming dynasty, China, 127  
Round (*Yuan Ch'a P'ing*), of jadeite, reign of Ch'ien-lung, China, 171



Screen—*continued*

(*Ch'a P'ing*), nephrite, reign of Wan-li, China, 242, 243  
(*Ch'a P'ing*), jadeite, nineteenth century, Annam, 261-263

Screens, round (*Yuan Ch'a P'ing*), of nephrite, K'ang-hsi and Ch'ien-lung, China, 157, 214, 223, 230  
(*Ch'a P'ing*), jadeite and nephrite, reign of Ch'ien-lung, China, 164, 185, 186, 188, 196, 199, 200, 205, 208, 224, 225

Scriptures, Buddhist. *See* Buddhist Scriptures

Seal (*Yin*), nephrite, Ming dynasty, China, 137

Double-dragon (*Shuang Lung Yin*), of nephrite, reign of K'ang-hsi, China, 155

Seal Casket. *See* Casket

Seal-engraving, admirable example of Chinese, 137

Seals, square (*Fung Yin*), of nephrite, dating from Han dynasty, China, 110

Seas. *See* the various qualifying names

See, Ueberlinger, Unter. *See* Ueberlinger, Unter

Seeland, jade implements said to have been found in island of, 55, 91

Selawiks, jade knife-sharpener belonging to wife of chief of Eskimo tribe of, 54, 83

Selkirk, Thomas, on mining and selling of jade in Burma, 10

Serpentine, veinings of cream-colored mineral resembling marmolite or other form of, 8

Pyroxene found by Traube in nephrite between granulite and, 42

Vein of yellow translucent substance suggesting precious, 46

Seven Buddhas, the, 173, 174

Shah, Bahadur. *See* Bahadur Shah

Shah, Nadir. *See* Nadir Shah

Shah Jehan, Mogul emperor, Indian art objects of jade referred to reign of, 115, 256

Shanghai, rough earth-covered piece of jadeite brought from Burma to, 6

Jadeite fragment purchased by Dr. Edkins at, 10  
Imports of crude jade into, 10

Nephrite specimens obtained through Dr. Edkins of, 29  
Nephrite specimen purchased by Dr. Edkins in, for Collection, 29

Shang Ti, Supreme Deity of ancient Chinese classics, 127

*Shan-tsü* (Chinese). *See* Boulder, Landscape, and Scene

*Shao-tsü* (Chinese). *See* Table-spoons

Sheath-knife (*Tao-tsü*), nephrite, Chia-ch'ing to Kuang-hsü, 241

*Shên Hsien* (Chinese). *See* Taoist Figure

Shensi, jade localities in, mentioned in Chinese topographies, 29

*Shih-erh-Chin* (Chinese). *See* Zodiac

*Shih-tsü* (Chinese). *See* Lion and Lions

Shou, imprisonment of Wên Wang by, 108

Shou. *See* Fu

Shou Hsien, Shou Hsing, other names of Shou Lao, Chinese longevity deity, 152

*Shou Kai P'ing* (Chinese). *See* Monster

Shou Lao, Chinese god of longevity, 126, 137, 216, 226, 227, 242

Nephrite figure of, reign of K'ang-hsi, China, 152  
Jadeite and nephrite figures of, reign of Ch'ien-lung, China, 162, 213, 214

*Shou Shan* (Chinese). *See* Longevity Mountain and Scene

*Shou Shih* (Chinese). *See* Jewelry

*Shuang Fêng P'ing* (Chinese). *See* Vase

*Shuang Kuan P'ing* (Chinese). *See* Vases

*Shuang Lung P'ing* (Chinese). *See* Vase

*Shuang Lung Yin* (Chinese). *See* Seal

*Shuang T'ao* (Chinese). *See* Peaches

*Shuang Yü-Lung P'ing* (Chinese). *See* Vase

*Shu Chên* (Chinese). *See* Paper-weight and Paper-weights

Shu Ching, or Shu King, Chinese classical Book of History, 156 (*note*), 211, 232 (*note* 9)

*Shui Ch'êng* (Chinese). *See* Water-holder and Water-receptacle

*Shui Niu* (Chinese). *See* Water-buffalo

*Shui-shou* (Chinese), grotesque water-monster of nondescript character, 132

Shun, Chinese emperor, 156 (*note*), 196, 199

*Shuang Yen Hu* (Chinese). *See* Snuff-bottle

Siang River, in China, 29

Siberia, nephrite discovered *in situ* by Jaczewski in Sajan Mountains of, 26

Small rough fragment of nephrite from, 34

Part of weathered and much abraded boulder from, 34

Section of small nephrite boulder from, 34

Rough nephrite fragment fractured out of boulder from Belaja River in, 34

Fragment of large boulder of nephrite from, 35

Small fragment cut from nephrite boulder found near Lake Baikal in, 35

Rough nephrite fragment taken by Prof. Jaczewski from Onot River in, 35

Small nephrite slab discovered by Jaczewski in, 35

Jade discovered *in situ* in, by Jaczewski, 35, 37

Outer slab cut from weathered mass of nephrite found in, 35

Large thin slab of beautifully translucent nephrite obtained in, 36

Rough fragment of primary nephrite discovered by Jaczewski in, 36

Rough fragment of nephrite boulder with schistose structure obtained in, 36

Thick section of weathered and water-worn nephrite boulder discovered in, 36

Segment of nephrite boulder, with part of original ferruginous skin, discovered in, 36

Great beds of nephrite on northern slope of Kitoi Alps in, 37

Fragment taken by Jaczewski from immense nephrite boulder on Onot River in, 37

Large rough mass of nephrite, with two flat cut surfaces, obtained in, 37

Rough fragment of nephrite with one polished face obtained in, 37

Large weathered block of nephrite with two cut surfaces discovered in, 37

Fragment of water-worn nephrite boulder, beautifully showing color, discovered in, 37

Part of very thin slab cut from nephrite boulder discovered in, 38

Fractured fragment of translucent nephrite taken from Onot River in, 38

Long, narrow section cut from nephrite boulder taken from Onot River in, 38

Fragment of large boulder of translucent nephrite discovered in, 38

Half of long boulder obtained in, from which segment has been removed, 39

Section of water-worn nephrite boulder from, with almost polished outer surface, 39

Thick section of rough, weathered, and partly water-worn nephrite mass from, 39

Part of nephrite boulder from, with four cut faces, 39

Segment of much-weathered boulder of translucent nephrite from, 40

Truncated segment of nephrite boulder from, showing different degrees of water action, 40

Thick section of rough nephrite mass from, with two parallel polished faces, 40

Nephrite specimens brought by Permikin to St. Petersburg from, 40

Cross-section of nephrite boulder from Wilna River in, 41

Oblong nephrite fragment from, with one polished and one rough weathered face, 41

Piece of nephrite boulder from, very smooth in part and almost black, 41

Theory of Fischer regarding transport of Schwemsal and other blocks from, 46

Aboriginal jade implements and tools from, 53, 54

Nephrite axe from Bering Sea coast of, 85

Nephrite adze, with sharp cutting edge, from Bering Sea coast of, 85

Discovery of nephrite in large masses in, 116

Siberia, Eastern. *See* Eastern Siberia

Signet (*Kang Mao*), nephrite, dating from Han dynasty in China, 109

Signets (*T'u Shu*), nephrite, period unknown, from China, 112

Signs of Zodiac. *See* Zodiac

Silesia, mammoth nephrite block discovered by George F. Kunz near Jordansmühl in, 41, 42, 43

Large broken fragment of nephrite from, 43

Thin nephrite fragment, polished on one face, found in, 44

Rough fragment of translucent nephrite from Jordansmühl in, 44

Rough nephrite fragment from, with characteristic splintery structure, 44

Fractured specimen of nephrite from, resembling pounamu of New Zealand, 44

Fragment of rough nephrite mass from, showing surface of vein, 44

Silesia—*continued*

Section of crude block of nephrite from Jordansmühl in, 45

Fragment of nephrite found in the quarry at Jordansmühl in, 45

Small fragment from mammoth nephrite block discovered by Mr. Kunz in, 45

Crude fragment of nephrite from Reichenstein in, 45

Small fragment of nephrite rock-mass mined at Reichenstein in, 46

Rough nephrite fragment from, with one face showing saw-marks, 46

Crude nephrite fragment, with one cut face, found in Reichenstein in, 46

Fischer's theory weakened by discovery of jade *in situ* in, 46

Silica, percentages of, in specimens, 3, 4, 5, 7, 8, 12, 14, 16, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 59, 60, 61, 62, 71, 74, 88, 91, 93, 95, 97, 98, 104, 106, 109, 118

Sitka, broken adze, probably of nephrite, altered by action of heat, from, 79

Skeene River, settlements of Chimsian Indians along, 89

Sledge Island, fragment of nephrite hatchet from, 80

Slicing-wheel, Chinese. *See* Chinese Slicing-wheel

Slickenside, parallel markings suggesting an original, 3

Rough nephrite fragment furnishing pronounced example of original, 35

Broken vein with parallel raised markings suggesting surface of, 41

Much-weathered fractured nephrite mass with surface an apparent, 47

Crude nephrite fragment with weathered surfaces showing slight traces of, 48

Smith, Harlan S., nephrite pebble found near mouth of Nooksak River by, 47

Nephrite pebble found by, between Fraser and Thompson rivers in British Columbia, 47

Smith, Percy, on New Zealand native ear-drops, 267

Snuff-bottle, nephrite pebble perforated for use as, 22

Double (*Shuang Yen Hu*), of nephrite, reign of Ch'ien-lung, China, 181

(*Pi-yen Hu*), jadeite, Chia-ch'ing to Kuang-hsü, 240

Snuff-bottles (*Pi-yen Hu*), of jadeite and nephrite, Ming, K'ang-hsi, and Ch'ien-lung, 119, 122, 139, 140, 142, 159, 160, 167, 172, 175, 178, 214, 223

(*Yen-Hu*), jadeite, reign of Ch'ien-lung, China, 167, 168, 237

Soda, percentages of, in specimens, 3, 4, 5, 7, 8, 12, 14, 16, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 59, 60, 61, 62, 71, 74, 88, 95, 97, 98, 106, 118

Specimen composed of jadeite and amphibole rich in, 8

Jadeite a silicate of alumina and, 15

Sodium, strong flame indicating, on fusion of gray mineral before blowpipe, 22

Flame reaction for, 22

Southern China, jade supplies sent to Canton in, 10

Liu Yang a jade-bearing river of, 29

Southwestern China, belief regarding amulets in, 106

Spain, perforated chisel-shaped jade hatchet found in, 55, 94

Nicolas Monardes on bringing of *pedras de hijadas* (jade stones) to, 56, 100

Spanish Conquest, jade implements dating from before, 53

High degree of civilization possessed by Cakchiquels at time of, 98

Specific Gravity of Specimen. *See* Summary preceding Description of Specimen

Specimen-numbers. *See* Arabic figures in left margin of Catalogue

Sphene, grains of yellow mineral, with high refraction, suggesting, 63

Stand for Wine-cup (*Wan Chou*), nephrite, reign of Ch'ien-lung, China, 237

Starnberg, discovery of prehistoric objects in, 57

Steiger, Dr. George, chemical analysis of fragment of huge nephrite block by, 41

Stone Age, prehistoric objects belonging to later period of, 57

Primitive savagery of earlier period of, 57

Relics of, discovered at different places in Yverdon district, Switzerland, 59

Inhabitants of pile-dwellings on Lake Bienné assigned to later, 65

Stone Age, Guide to the Antiquities of the, 102

Stones, Musical. *See* Musical Stones



- Stone Village. *See* Tam-aghil
- Stoney, Lieut.-Com. George E. M., U. S. N., section of nephrite block obtained by, 49
- Stork (*P'ai-tsü*), jadeite, bearing in beak a branch with two peaches, 118
- Styria, casts of two rolled pebbles of leek-green nephrite found in, 55, 90, 91
- Sulphide of Iron. *See* Iron Pyrites
- Sulphur Creek, large water-worn nephrite pebble found in, 49
- Summer Palace (Yuan Ming Yuan) at Peking, looting of, 15, 117, 120, 123, 124, 132, 140, 141, 142, 147, 156, 157, 170, 193, 194, 195, 196, 204, 209, 223, 226, 227, 232, 243
- Sungaria, green variety of jade from, 26
- Sung Dynasty, China, jade objects referred to, 117
- Survey, United States Geological, 41
- Survey of India, Geological, 3, 10
- Sweden, Schwemsaal block shown by Credner to have originated probably in, 46
- Switzerland, nephrite specimen found in remains of pile-dwellings of Lake Neuchâtel in, 47
- Jade implements from lake-dwellings of, 53
- Prehistoric jadeite hatchet found in remains of pile-dwellings of, 56
- Short stout chloromelanite hatchet, with crescent-shaped cutting edge, from, 57
- Small chloromelanite hatchet, with broad cutting edge, from, 57
- Very tiny nephrite knife, in holder, from lake-dwellings of, 58
- Jadeite-nephrite-zoisite hatchet, with holder, from ancient pile-dwellings of, 58
- Small jadeite hatchet found among remains of ancient pile-dwellings of, 59
- Prehistoric jadeite hatchet found among remains of ancient pile-dwellings in, 59
- Small flat jadeite hatchet, with straight cutting edge, from pile-dwellings of, 59
- Jadeite hatchet, with sharp, somewhat crescent-shaped cutting edge, from, 60
- Jadeite hatchet, with slightly curved faces and flat sides, from, 60
- Small flat chloromelanite hatchet found in remains of ancient pile-dwellings in, 60
- Wedge-shaped nephrite hatchet, broken at upper end, from, 61
- Nephrite hatchet found among piles of ancient lake-dwellings in, 61
- Small nephrite hatchet, of good outline and smoothed all over, from, 61
- Nephrite hatchet, narrow at top and wide at cutting edge, found in, 61
- Nephrite hatchet, with smooth flat faces and stained sides, from, 62
- Small thick broken nephrite hatchet from ancient pile-dwellings of, 62
- Part of small thin flat nephrite hatchet, with sharp cutting edge, from, 63
- Small narrow thick nephrite chisel found among remains of pile-dwellings in, 63
- Small thick nephrite chisel found among remains of ancient pile-dwellings in, 63
- Long thick jadeite chisel, with rounded body and sharp cutting edge, from, 63
- Prehistoric nephrite knife, with horn handle, found in pile-dwellings of, 64
- Tiny nephrite knife found among remains of ancient pile-dwellings in, 64
- Nephrite knife, with narrow head and much wider cutting edge, from, 64
- Small nephrite knife found in ancient pile-dwellings of Lake Neuchâtel in, 64
- Prehistoric nephrite knife found among pile-dwelling remains on Lake Neuchâtel in, 65
- Jadeite knife, broken or unfinished at top, from ancient pile-dwellings of, 65
- Small thick nephrite knife found in ancient pile-dwellings of, 65
- Jadeite knife, with horn handle, found in remains of pile-dwelling settlement in, 65
- Nephrite knife, with horn handle, found among remains of pile-dwellings in, 66
- Prehistoric jade weapons and implements discovered among remains of lake-dwellings in, 116
- Switzerland, East. *See* East Switzerland
- Sword-guard, nephrite, seventeenth century, India, 251, 252
- Synopsis, Archaeological, 53-56

## INDEX

- System of Mineralogy (Dana), two analyses of glaucophane from, 59
- Szechenite, blackish-green veins probably composed of, 6
- Blackish-green patches probably consisting of, 6
- Szö-ma Ts'ien, Chinese historian, 135
- Szombathy, specific gravity of nephrite pebble determined by, 91
- Tables—Analysis by Dr. Busz, 3
- Reduction of analysis by Penfield, 4
- Average results of resistance tests, 5
- Reduction of Dr. Foote's analysis by Clarke, 5
- Three analyses of jadeite made by Walden, 7
- Chemical analysis of jadeite specimen by Dr. Harry W. Foote, 8
- Foote's analysis of jadeite core, with Clarke's reduction, 12
- Analysis of coarse-grained jadeite specimen, with reduction by Clarke, 14
- Clarke's reduction of Walden's analysis of jadeite pendant, 14
- Clarke's reduction of analysis of jadeite fragments by Foote, 17
- Chemical analysis of section of nephrite block by Foote, with Clarke's reduction, 23
- Walden's analysis of nephrite fragment calculated by Clarke, 24
- Foote's analysis of large nephrite block, with Clarke's reduction, 26
- Chemical analysis of section of nephrite boulder by Foote, with Clarke's reduction, 27
- Walden's analysis of fragment of nephrite medallion, with reduction by Clarke, 28
- Analysis of broken Chinese ornament by Walden, with Clarke's reduction, 28
- Walden's analysis, with Clarke's reduction, of broken oblong nephrite medallion, 28
- Walden's analysis of flattish nephrite boulder calculated by Clarke, 32
- Analysis of part of nephrite boulder, with reduction by Clarke, 32
- Analysis of oblong polished nephrite slab calculated by Clarke, 33
- Results of Walden's analysis, with Penfield's reduction, 34
- Analysis by Walden, calculated by Clarke, showing chemical composition of nephrite, 38
- Clarke's calculation of Foote's analysis of specimen of Siberian nephrite, 40
- Steiger's analysis of fragment of huge nephrite block calculated by Clarke, 41
- Chemical analysis made by Dr. Carl Busz, with Clarke's reduction, 43
- Chemical analysis of nephrite material by Foote, with reduction by Clarke, 43
- Two analyses of nephrite made by Dr. Walter Hertz, 43
- Section of Jordansmühl nephrite analyzed by Walden and reduced by Clarke, 45
- Foote's analysis of specimen of Alaskan nephrite, with reduction by Clarke, 48
- Clarke's reduction of chemical analysis of nephrite specimen from Alaska, 48
- Walden's analysis of New Zealand (?) nephrite, with Clarke's reduction, 49
- Analysis of thin broken slab of nephrite by Walden reduced by Clarke, 50
- Walden's analysis of New Zealand nephrite, with Penfield's reduction, 51
- Chemical composition of only example in Collection of glaucophane and zoisite mixture, 58
- Two analyses of glaucophane from Lyra, one of the Cyclades, 59
- Foote's chemical analysis of material of jadeite hatchet calculated by Clarke, 60
- Walden's analysis of material of nephrite hatchet calculated by Clarke, 61
- Material of nephrite hatchet analyzed by Walden and calculated by Penfield, 62
- Walden's analysis of material of prehistoric nephrite hatchet, with Clarke's reduction, 62
- Results of chemical analysis by Walden, with reduction by Penfield, 71
- Results of chemical analysis by Foote, with reduction by Clarke, 74
- Analysis of material of nephrite axe by Walden, with reduction by Clarke, 88
- Chemical analysis of nephrite pebbles, 91
- Results of chemical examination by Frenzel, 93
- Chemical analysis of small thick jadeite (?) hatchet by Frenzel, 95
- Analysis of partly worked piece of spinach-green nephrite, 97
- Analysis of material of small Mexican jadeite mask, 98

- Tables—*continued*
- Walden's analysis, with Clarke's reduction, of piece of Chinese tablet of rank, 104
- Clarke's reduction of Walden's analysis of ornamented nephrite celt, 106
- Table-spoons (*Shao-tsü*), six nephrite, Ming dynasty, China, 136
- Tablet, Sacrificial (*Kuei Pi*), of nephrite, from China, 104
- Sacrificial (*Kuei Pi*), of bowenite, from China, 107
- Tablet of Rank (*Kuei*), nephrite, from China, 104
- Tacamaca, human teeth inlaid with jadeite found in grave in, 56, 101
- Tacana, Mount. *See* Mount Tacana
- Ta *Chü Hua P'an* (Chinese). *See* Dish of chrysanthemum pattern
- "Tadpole," ancient Chinese character called, 14
- Ta *Hsi* (Chinese). *See* Basin
- Ta *Hsi-tsü* (Chinese). *See* Bowl with handles
- Tai *Kou* (Chinese). *See* Girdle-buckle, Girdle-buckles, and Girdle-clasps
- T'ai Kung and Po Yi, the Êrh Lao, or Venerable Men, of the Chinese, 227
- Tai *Pan* (Chinese). *See* Plaque
- Tai-ping Rebellion, existence of Manchu dynasty threatened by, 147
- Capture of Chinkiang Fu and plunder of Golden Island in, 230
- Tai Shan, famous ancestral mountain of ancient China, 104
- T'ai *Shih Hsiao Shih* (Chinese). *See* Lions
- T'ai Tsung, Chinese emperor, second of T'ang dynasty, 145
- Ta *Kai Wan* (Chinese). *See* Bowl with cover
- Talc, crystalline patch with hardness not much greater than, 35
- Tam-aghil, or Stone Village, beginning of desert at, 19
- Tamerlane (Timur), tiny fragment from great nephrite monolith on tomb of, 26
- Dimensions and inscription of great nephrite monolith on tomb of, 26
- Break in monolith of, said to have occurred in time of Nadir Shah, 26
- Great monolith on tomb of, at Samarkand said to have come from Manas, 26
- Tammaw, jade-mines of, 3
- T'ang Jung-tso, on Burma as true source of so-called "Yunnan jade," 10
- Fischer's theory supported to some extent by statement of, 26
- On characteristic varieties of tomb jade, 103
- Dr. Bushell's introduction to essay by, 103 (*note*)
- Two kinds of *pi* mentioned by, 105
- Chinese nephrite girdle-appendage described by, 111
- On jade pillows and their use, 141
- T'ang *Seng* (Chinese). *See* Buddhist Monk
- Taoism, Lao-tzü celebrated founder of, 149, 153, 242
- Taoist Divinity (*Hsi Wang Mu*), nephrite, reign of Ch'ien-lung, China, 203, 204
- Taoist Figure (*Shên Hsien*), nephrite, reign of Ch'ien-lung, China, 199
- Taoists, mythological symbols of ancient nature-worship of, 102
- Mystical fancies of, 126
- Tao Shuo, well-known work on Chinese pottery and porcelain, 193
- Tao Tê Ching, or Bible of Taoist philosophers, 149, 153, 214
- Tao-t'ieh (Chinese). *See* Ogre
- Tao-tsü (Chinese). *See* Sheath-knife
- Tao Yuan-ming, Chinese scholar and dilettante, 251 (*see also note 4*)
- Ta *P'an* (Chinese). *See* Dish
- Ta *Shou Shan* (Chinese). *See* Longevity Mountain
- Tassel-slide, nephrite, from China, 105
- Ta *Yü Kang* (Chinese). *See* Fish-bowl
- Tehuktehchis. *See* Chukchis
- Temple Figure (*Yü Jên*), nephrite, Ming dynasty, China, 137
- See also* Figure
- Temple of Heaven, Peking, principal ceremonies at, 105, 127
- T'êng-yueh Chow (also, probably, T'êng-yang), Chinese lapidaries still purchase jade at, 10
- Much jade carved at, 240
- Tension (or Tensile) Tests, 5, 23, 27, 32, 40, 42, 51
- Testing-machine. *See* Emery Hydraulic Testing-machine
- Tests. *See* Compression, Impact, Resistance, Tension



- Te Wahi Pounamu, or Middle Island, chief jade-producing district of New Zealand, 265
- Thompson River, nephrite pebble found on sand-hill between Fraser River and, 47
- Through Asia (Svèn Hedin), 19
- Thumb-ring, archer's (*Pan Chih*), of nephrite, dating from Han dynasty, 109
- Thumb-rings (*Pan Chih*), jadeite, reign of Ch'ien-lung, China, 168
- Jewelled nephrite, nineteenth century, India, 259, 260
- Tibet, fragment of jadeite boulder probably from, 15
- Thin slab of jadeite assigned to, 15
- Thin section of jadeite probably from, 16
- Small square slab of jadeite said to come from, 16
- Small fragment of jadeite assigned to, 16
- Two angular fragments of jadeite probably from, 16
- Two angular fragments of water-worn mass of jadeite said to come from, 17
- Small angular fragment of jadeite said to have been brought from, 17
- Capt. Younghusband on, as source of jade, 17
- Thin slab cut from weathered mass of jadeite probably from, 18
- Fragment of jadeite specimen from northern Himalayas, but assigned to, 18
- Statuette of Venus de Milo made from jadeite boulder said to come from, 162
- Tibet, Grand Lama of. *See* Grand Lama of Tibet
- Tibet, Little. *See* Little Tibet
- Tieh-tzu* (Chinese). *See* Dish, Plate, Saucer Dishes, and Tray
- Tien-pao, Chinese dealer in art objects, 232
- Tien-Shan, or Celestial Mountains, Barkul situated near eastern end of, 25 (see also *note*)
- Green variety of jade from northern slope of eastern, 26
- Timur. *See* Tamerlane
- Ting* (Chinese). *See* Incense-burner and Knobs
- Ting Lu* (Chinese). *See* Incense-burners
- Titanic Oxide, percentage of, in specimen, 43
- Titanite, epidote or, believed to be recognized in nephrites by Arzruni, 42
- Tlinkits, jade adzes set in wooden handles by, 54
- Rough nephrite axe supposed to belong originally to, 76
- Nephrite hatchet from Bering Sea coast of Alaska assigned to, 80
- Nephrite chisel, with good cutting edge at lower end, obtained from, 81
- Tolna, fragment of jadeite specimen cut from axe found in, 47
- Tomb, tiny fragment of nephrite from great monolith on Tamerlane's, 26
- Tomb Jades (Chinese *Han Yü*), 54, 102-113
- T'o Pao P'ing Hsiang* (Chinese). *See* Elephant
- T'o P'ing Hsiang* (Chinese). *See* Elephant
- T'o Shu Ma* (Chinese). *See* Horse
- Trade Report, Chinese Imperial Maritime Customs, 10
- Transactions of New Zealand Institute, 87, 90, 101
- Traube, H., substance called epidote or zoisite by, 42
- Pyroxene found by, in nephrite from Jordansmühl, 42
- Tray (*Hsi-tzu*), jadeite, Ming dynasty, China, 120
- Tray for wine-cup (*Tieh-tzu*), nephrite, reign of Ch'ien-lung, China, 234
- Tremolite, coarsely crystalline subtranslucent gray substance supposed to be, 24
- Pure specimen of Alaskan nephrite having composition of, 47
- Treves, long flat chloromelanite hatchet found on Pfalzkyll Farm near, 92
- Long thick jadeite (?) hatchet from, 93
- Treves, Provincial Museum at, 92
- Trier, Germany, Provincial Museum at, 93
- Tripod, Sacrificial (*San Hsi Ting*), of nephrite, reign of Ch'ien-lung, China, 224
- Tsao Fu, charioteer of Emperor Mu Wang, 198
- Ts'ao Kuo-chün, Taoist divinity, 161, 163
- Ts'ao Wên-chih, famous Chinese scholar, 208 (see also *note* 3)
- Tsun* (Chinese). *See* Vase
- Tunga River, fragment of water-worn nephrite boulder from valley of, 24
- Tung-fang So, Taoist peach-eater, legend concerning, 126
- Tung-ting-hu Lake, in China, 29
- Tun Lu* (Chinese). *See* Incense-burner
- Turkistan, rough fragment of nephrite said to have come originally from, 24
- Tiny fragment from great nephrite monolith on tomb of Tamerlane in, 26
- Fragment of oblong medallion carved in China from nephrite brought from, 27
- Broken nephrite ornament of Chinese workmanship probably from, 28
- Fragment of oval medallion carved by Chinese in nephrite possibly from, 28
- Broken oblong nephrite medallion fashioned by Chinese from material assigned to, 28
- Part of decorated cover of jar fashioned by Chinese of nephrite from, 29
- Section of rough water-worn nephrite boulder possibly from, 29
- China dependent on jade-mines or jade-rivers of, for jade material, 29
- Section of much-weathered nephrite mass possibly from, 30
- Fragment of mass of compact and homogeneous nephrite possibly from, 30
- Rough nephrite pebble possibly derived from, 30
- Thick nephrite disc possibly found in, 30
- Cut section of nephrite block said to be from Ho-nan, but probably from, 31
- Nephrite for Chinese works of art in jade probably derived from, 31
- Outer slab of nephrite boulder possibly derived from, 31
- Long flattish nephrite boulder likely to have come from some river of, 31
- Part of nephrite boulder assigned to China, but possibly from, 32
- Cylindrical core drilled in China from mass of nephrite originating in, 33
- Oblong polished nephrite slab assigned to China, but possibly from, 33
- Section of nephrite boulder said to be from Yunnan, but possibly from, 33
- Theory of Fischer regarding transport of Schwemal and other blocks from, 46
- Turkistan, Chinese. *See* Chinese Turkistan
- Turkistan, Eastern. *See* Eastern Turkistan
- Turquoise, human tooth inlaid with, labelled "Peru," 56
- T'u Shu* (Chinese). *See* Signets
- Tzენტals, Mexican and Mayan culture known to, and amulets used by, 56, 100
- Cakchiquels, of cultured Maya stock, related to, 96, 97, 98
- Ud-lé-man (Axe or Adze), aboriginal Alaskan nephrite, obtained from Lieut. Emmons, 76
- Small rough nephrite, from Kotzebue Sound, Alaska, 79
- Rough nephrite, from Alaska, with wide cutting edge ground from two faces, 79
- Ueberlinger See, discovery of prehistoric objects in, 57
- Prehistoric relics discovered in exploration of pile-dwellings on, 66
- U-lú-ra (Knife), jade, used by natives of Alaska for domestic purposes, 54
- Nephrite, used by Alaskan native women, 81
- Long thin-bladed nephrite, set in thick holder of wood, 82
- United States, nephrite pebble found near mouth of Nooksak River in, 47
- United States Geological Survey, 41
- United States National Museum, specimen of Alaskan nephrite presented to Collection by, 48
- Prehistoric nephrite knife obtained from late Dr. Thomas Wilson of, 67
- Well-formed adze of Alaskan nephrite from, 78
- Broken nephrite adze, exhibiting original fractured surface and weathering, from, 80
- Fragment of sage-green jadeite pendant found in Yucatan, from, 101
- University of Breslau, Chemical Institute of, 43
- Unter See, discovery of prehistoric objects at places on, 57
- First discovery, in 1856, of pile-dwellings at Wangen on, 66
- Upper Burma, jadeite fragment from, 3
- Jade-mines of, 3
- Thick flat section of jadeite from, 3
- Small angular fragment of jadeite found in, 4
- Fragment of much-weathered jadeite boulder from, 4
- Flat angular fragment of jadeite found in, 4
- Thick lozenge-shaped section of jadeite from, 5
- Rectangular block of jadeite found in, 5
- Section of jadeite pebble from, 6
- Thick slab cut from weathered and water-worn boulder found in, 6
- Upper Burma—*continued*
- Two jadeite slabs brought from, 7
- Jade-producing districts of, 10
- Digging at jade-mines in, carried on by Kachins, 10
- Discovery and description of jade-mines of, by Dr. Noetling, 10
- Utins, Les. *See* Les Utins
- Valentini, Dr. Philip J. J., article by, on Humboldt Celt and Leyden Plate, 96
- Van Aalst. *See* Aalst
- Van Braam. *See* Braam
- Varangoz, A. Berquin-. *See* Berquin-Varangoz
- Varangoz, Mme., information about jadeite bust of Napoleon III given by, 16
- Vase, Elephant carrying. *See* Elephant
- Vase, Lotus-leaf (*Ho-yeh P'ing*), of nephrite, from China, 111
- Small quadrangular (*Hsiao Fang P'ing*), of jadeite, Ming dynasty, China, 119
- Plum-tree (*Mei Hua P'ing*), of jadeite, Ming dynasty, China, 120
- Gourd-shaped (*Hu Lu P'ing*), of jadeite, Ming dynasty, China, 121
- Square (*Hua Ku*), of nephrite, Ming dynasty, China, 124
- (*Hua Ku*), small nephrite, Ming dynasty, China, 128
- Rectangular (*Fang Chieh*), of nephrite, Ming dynasty, China, 129
- Quadrangular (*Fang Hu*), of nephrite, Ming dynasty, China, 131
- Flower (*Hua Ku*), of nephrite, Ming dynasty, China, 132
- Miniature flower (*Hsiao Hua Ku*), of nephrite, Ming dynasty, China, 133
- Double flower (*Hua Ch'a*), of nephrite, Ming dynasty, China, 136, 137
- (*Ku*), small nephrite, in form of flattened beaker, Ming dynasty, China, 139
- Quadrangular (*Fang P'ing*), of jadeite, reign of K'ang-hsi, China, 142
- Double-dragon (*Shuang Lung P'ing*), of nephrite, reign of K'ang-hsi, China, 143
- Flower (*Hua Ch'a*), of nephrite, reign of K'ang-hsi, China, 145
- Double-phenix (*Shuang Feng P'ing*), of nephrite, reign of K'ang-hsi, China, 146
- Beaker-shaped (*Hua Ku*), of nephrite, reign of K'ang-hsi, China, 148
- Lotus (*Lien-hua P'ing*), of nephrite, reign of K'ang-hsi, China, 149
- Miniature (*Hua Ch'a*), of nephrite, reign of K'ang-hsi, China, 151
- Flower (*Hua P'ing*), of nephrite, reign of K'ang-hsi, China, 152
- Double fish-dragon (*Shuang Yü-Lung P'ing*), of nephrite, reign of K'ang-hsi, China, 153
- Small jadeite double-gourd (*Hu Lu P'ing*), reign of Ch'ien-lung, China, 162
- (*Tsun*), nephrite, reign of Ch'ien-lung, China, 175
- Magnolia (*Yu-lan P'ing*), of nephrite, reign of Ch'ien-lung, China, 177
- Miniature (*Hsiao Tsun*), of nephrite, reign of Ch'ien-lung, China, 199
- Small quadrangular (*Fei-chi P'ing*), of nephrite, reign of Ch'ien-lung, China, 200
- Quadrangular (*Fang P'ing*), of nephrite, reign of Ch'ien-lung, China, 203
- Dragon and phenix (*Lung Feng P'ing*), of nephrite, reign of Ch'ien-lung, China, 210
- Small flower (*Hsiao Hua P'ing*), of nephrite, reign of Ch'ien-lung, China, 213
- (*Kuan*), nephrite, reign of Ch'ien-lung, China, 219
- Floral, of nephrite, probably seventeenth century, India, 249
- Jewelled nephrite, nineteenth century, India, 260
- Vases (*P'ing*), jadeite and nephrite, Ming dynasty and Ch'ien-lung, China, 121, 220
- Double-cylinder (*Shuang Kuan P'ing*), of nephrite, Ming and Ch'ien-lung, China, 124, 198, 199
- Beaker-shaped (*Hua Ku*), of nephrite, reigns of K'ang-hsi and Ch'ien-lung, China, 144, 194
- With covers (*Kai P'ing*), nephrite and jadeite, reigns of K'ang-hsi, Yung-ch'eng, and Ch'ien-lung, 154, 158, 195, 201, 202, 207, 216
- (*P'ing*), jadeite and nephrite, reign of Ch'ien-lung, China, 165, 166, 173, 176, 187, 188, 189, 198
- Flower (*Hua Ch'a*), nephrite and jadeite, Ch'ien-lung, Chia-ch'ing to Kuang-hsi, China, 187, 189, 190, 240
- With covers (*Pei Hu P'ing*), nephrite, reign of Ch'ien-lung, China, 196, 217
- With flowers (*Hua P'ing*), jadeite and nephrite, reign of Chia-ch'ing, China, 247



- Vauchuse, small thick jadeite chisel, with rounded cutting edge, found at Bonnieux in, 69
- Venus de Milo, celebrated statue in Louvre, jadeite statnette copy of, 16, 116, 162, 264  
Made by M. Berquin, noted Paris lapidary, 16, 264  
Jadeite block from portion of which was fashioned figure of, 17
- Vessel, Sacrificial (*Yi Lu*), nephrite, period unknown, from China, 112  
Sacrificial (*Chiu Kuan*), nephrite, early Ming dynasty, from China, 113  
Sacrificial, of jadeite, Chia-ch'ing to Kuang-hsi, 239
- Victoria, nephrite specimen obtained in, 74
- Victoria, Queen, jade ju-i, or sceptre, sent by Emperor Kuang-hsi to, 148
- Vienna, small slab of nephrite secured by Dr. Meyer from Dr. Eger of, 52<sup>+</sup>
- Vienna, Imperial Museum of Natural History at, 47, 55, 95
- Volkerkunde, Museum für, Berlin, 101
- Von Humboldt. *See* Humboldt
- Von Jeremejew. *See* Jeremejew
- Von Jurié. *See* Jurié
- Von Kriegsheim. *See* Kriegsheim
- Von Musketow. *See* Musketow
- Von Schlagintweit. *See* Schlagintweit
- Walden, Prof. Percy T., three analyses of jadeite made by, 7  
Analysis of jadeite pendant by, 14  
Analysis of nephrite fragment by, calculated by Clarke, 24  
Analysis of fragment of nephrite medallion by, with Clarke's reduction, 28  
Analysis of broken Chinese ornament by, with Clarke's reduction, 28  
Analysis of broken oblong medallion by, with reduction by Clarke, 28  
Analysis of flattish nephrite boulder by, with Clarke's calculation, 32  
Results of analysis by, with Penfield's reduction, 34  
Analysis by, calculated by Clarke, showing chemical composition of nephrite, 38  
Results of analysis of section of crude nephrite block by, 45  
Analysis of New Zealand (?) nephrite by, with Clarke's reduction, 49  
Analysis of small thin broken slab of highly translucent nephrite by, 50  
Chemical composition of New Zealand nephrite shown by analysis of, 51  
Analysis of jadeite-nephrite-zoisite specimen by, 58  
Analysis of material of nephrite hatchet by, 61  
Material of nephrite hatchet of usual form analyzed by, 62  
Analysis of material of prehistoric nephrite hatchet by, 62  
Results of chemical analysis by, with reduction by Penfield, 71  
Analysis of material of nephrite axe by, with reduction by Clarke, 88  
Analysis of partly worked piece of spinach-green nephrite by, 97  
Analysis of material of small Mexican jadeite mask by, 98  
Analysis of Chinese tablet of rank by, with Clarke's reduction, 104  
Clarke's reduction of analysis of ornamented nephrite celt by, 106  
Analysis of nephrite in archer's thumb-ring by, 109
- Walkinshaw, Mr., artist's jadeite dish or bowl purchased in China by, 170
- Wallhausen, broken nephrite hatchet, with straight sides and sharp cutting edge, from, 67  
Jadeite hatchet found among remains of ancient pile-dwellings near, 67
- Wall-vase (*Kua P'ing*), nephrite, reign of Ch'ien-lung, China, 193
- Wan (Chinese). *See* Bowl and Bowls
- Wan Chu (Chinese). *See* Stand for Wine-cup
- Wangen, discovery of prehistoric objects at, 57  
First discovery, in 1856, of pile-dwellings at, on Unter See, 66
- Wang Hsi-chih, renowned Chinese calligrapher, 223
- Wan-li, Chinese emperor, inlaid screen-picture referred to reign of, 115  
Edicts of, against tobacco, 122
- Warburg, flat jadeite hatchet found in district of, 93
- War-club (Maori *Mere*), formerly used by aborigines of New Zealand, 54, 55, 90
- Washington, nephrite pebble found near mouth of Nooksak River in State of, 47
- Washington, Dr. Henry S., special study of peculiar jadeite specimen by, 9  
Blowpipe tests of, 9
- Washington, United States Geological Survey at, 41
- Water, percentages of, in specimens, 5, 7, 8, 12, 14, 17, 23, 24, 26, 27, 28, 32, 33, 34, 38, 40, 41, 43, 45, 48, 49, 50, 51, 58, 60, 61, 62, 74, 88, 91, 93, 95, 97, 98, 104, 106, 109, 118
- Water-buffalo (*Shui Niu*), nephrite, reign of K'ang-hsi, China, 144
- Water-dish, artist's (*Hsi-tzu*), of jadeite, reign of Ch'ien-lung, China, 171
- Water-dishes (*Pi Hsi*), of nephrite, Ming dynasty and Ch'ien-lung, China, 122, 212, 213
- Water-holder, artist's (*Hsi-tzu*), of jadeite, reign of K'ang-hsi, China, 143
- Artist's (*Shui Ch'eng*), of nephrite, reign of K'ang-hsi, China, 150
- Artist's (*Hsi-tzu*), of nephrite, reign of K'ang-hsi, China, 151
- Water-horn. *See* Ink-pallet
- Water-jar (*Ling-chih Kuan*), nephrite, reign of Yung-ch'eng, China, 159
- Water-receptacle (*Hsi-tzu*), jadeite, referred to Ming dynasty, China, 119  
(*Shui Ch'eng*), nephrite, Ming dynasty, China, 128  
(*Hsi-tzu*), nephrite, Ming dynasty, China, 135  
(*Shui Ch'eng*), nephrite, Ming dynasty, China, 135, 136  
(*Hsi-tzu*), nephrite, reign of Ch'ien-lung, China, 188, 189  
(*Shui Ch'eng*), nephrite, reign of Ch'ien-lung, China, 201
- Wa-ua Chen (Chinese). *See* Pillow
- Weapons, Jade, aboriginal, 54, 55, 89, 90
- Weight of Specimen. *See* Summary preceding  
Description of Specimen
- Weinschenk, Prof., nephrite fragment presented to Collection by, 20
- Wells (Arthur) Collection, Maori heitiki (neck-ornament) of nephrite from, 101  
Jewelled nephrite box purchased at sale of, 252
- Wên Wang, imprisonment of, by tyrant Shou, 108  
Celebrated founder of Chou dynasty, 141, 167  
Sacrificial vessels of, 166, 167
- West Indies, notable representative of jade from, 53  
Prehistoric jadeite hatchet, of perfect outline and fine finish, from Jamaica in, 72  
Jadeite hatchet, of rounded section, with curved faces, probably from, 72  
Nicolas Monardes on *materia medica* of, 100
- Westphalia, chemical analysis made by Dr. Carl Busz of Münster in, 43  
Prehistoric flat jadeite hatchets found in, 93
- Westphalian Historical and Antiquarian Society at Münster, 93
- Wheels (*Lun*), nephrite, reign of Ch'ien-lung, China, 182
- White Jade River. *See* Yürüγκásh
- Wilkes Antarctic Expedition, 101
- Williams, Dr., quaint quotation from, 175
- Wilna River, cross-section of nephrite boulder from, 41
- Wilson, Dr. Thomas, prehistoric nephrite knife obtained from the late, 67
- Windischgrätz, Prince, small thick jadeite hatchet in collection of, 94
- Wine-cup (*Chiu Pei*), nephrite, period unknown, from China, 113  
(*Chiu Pei*), nephrite, Ming dynasty, China, 133  
Marriage (*Ho-huan Pei*), of nephrite, reign of Ch'ien-lung, China, 193  
Nephrite, seventeenth century, India, 248
- Wine-cups (*Chiu Pei*), pair of nephrite, reign of Ch'ien-lung, China, 233  
(*Chiu Pei*), eight jadeite, Chia-ch'ing to Kuang-hsi, 238
- Wine-jug (*Chiu Kuan*), nephrite, probably dating from before Ming dynasty in China, 118
- Wine-pitcher (*Chu-tzu*), nephrite, reign of Ch'ien-lung, China, 190
- Wine-pot (*Chiu Hu*), nephrite, early Ming dynasty, from China, 111
- Wo Ma (Chinese). *See* Horse
- Woolson, Prof. Ira Harvey, specimens tested for resistance to compression by, 4  
Jadeite specimens tested by, 7
- Woolson, Prof. Ira Harvey—*continued*  
Compression test of nephrite cube in Emery hydraulic testing-machine by, 32  
Compression tests made by, on two one-inch nephrite cubes, 42  
Compression and tensile tests made with New Zealand nephrite by, 51
- Wright, Mary Robinson, human teeth inlaid with jadeite found in Mexico by, 101
- Wu Lao, the "Five Old Ones," 196, 199
- Wu Ti, celebrated Chinese emperor, conquers West, traditional home of jade, 103  
Ardent devotee of Taoist religion, 108  
Legend concerning, 126
- Wu Wang. *See* Fa
- Yao, ancient Chinese emperor, 196, 199, 232 (see also note 5)
- Yao Chan (Chinese). *See* Celt, Hatchet, Medicine-spades
- Yarkand, specimens of nephrite labelled "China" probably product of, 29
- Yarkand Daria. *See* Yarkand River
- Yarkand River (or Daria), Raskam Daria an important tributary, if not head stream, of, 24, 25  
Rises in the Karakoram Mountains, 25  
Jade specimens from valley of, studied by Musketow, 26
- Yaseen, jade known to Bernier at Delhi under name of, 115
- Ya-tzu (Chinese). *See* Duck
- Yellow River, legend concerning sturgeon of, 105 (note 1), 183  
Supernatural dragon-horse rises out of, in time of Fu-hsi, 108
- Yen Hu (Chinese). *See* Snuff-bottles
- Yen-tung Tsui (Chinese). *See* Pipe-mouthpiece
- Yi Ching, or Yih-King, most venerated of Chinese classics, 108, 167
- Yi Lu (Chinese). *See* Vessel
- Yin (Chinese). *See* Seal
- Yin Ho (Chinese). *See* Casket
- Younghusband, Capt., well-known Asiatic traveller, on Tibet as source of jade, 17
- Yü, Chinese term commonly translated "jade," but including non-related stones, 29  
*See also* Bowenite
- Yuan Ch'ia P'ing (Chinese). *See* Screens
- Yuan-chuang, famous Chinese pilgrim, 145
- Yuan Ho (Chinese). *See* Box
- Yuan Hsi (Chinese). *See* Bowl with handles
- Yuan Kai Wan (Chinese). *See* Bowl and cover
- Yuan-k'e, famous Chinese rearer of silkworms, 232 (see also note 6)
- Yuan Ming Yuan. *See* Summer Palace
- Yucatan, lettuce-green jadeite amulet probably originally from, 56, 100  
Fragment of sage-green jadeite pendant from, 56, 101  
Human teeth encrusted with jadeite from, 56, 101
- Yü Ch'ing (Chinese). *See* Gong
- Yü Hwang (or Huang) Shang Ti, abode of, in Great Bear, 107, 127, 242  
Highest divinity of Taoist pantheon, 126, 242
- Yü Jen (Chinese). *See* Temple Figure
- Yü Kang (Chinese). *See* Fish-bowl
- Yukon, large water-worn nephrite pebble found in district of, 49
- Yü Lien-tzu (Chinese). *See* Chains
- Yung-ch'eng, jade objects referred to reign of, 158, 159
- Yunnan, jadeite not found geologically in, 6, 7  
Jadeite specimen from Burma by way of, 7  
Jadeite carried overland from quarries of Burma to, 7  
Crude fragment of jadeite labelled as from, but probably of Burmese origin, 9  
Fragment of jadeite said to be from, but probably from Burma, 10  
Jadeite fragment described by Mohammedan dealer at Shanghai as jade from, 10  
Tang Jung-tso on, as so-called source of jade, 10  
Jade supplies from Burma through, 10  
Meaning of name, as applied to jade, 10  
Jade disposed of by traders from, 10  
Traders from, still go direct to mines of Burma for jade, 10  
Lapidaries from other parts of China still purchase jade in cities of, 10  
Jadeite not a natural product of, 10



# INDEX

293

## Yunnan—continued

Noetling's declaration to Bauer affirming absence of jade *in situ* in, 10  
 Fragment of coarsely crystalline jadeite probably from Burma through, 10  
 Crude fragment of highly crystalline jadeite probably from Burma via, 10  
 Cuboidal fragment of jadeite probably from Burma via, 11  
 Small crude fragment of jadeite probably from Burma by way of, 11  
 Rough fragment of jadeite probably from Burma through, 11  
 Rough jadeite fragment probably from Burma via, 11  
 Flat fragment of jadeite probably from Burma by way of, 11  
 Broken cylindrical core of jadeite probably from Burma via, 12  
 Flat circular piece of jadeite probably from Burma by way of, 12  
 Cylindrical core of jadeite probably from Burma through, 12  
 Cylindrical jadeite core probably from Burma via, 12  
 Small jadeite disc probably from Burma by way of, 13  
 Partly cut piece of jadeite probably from Burma through, 13

## Yunnan—continued

Rough partly cut piece of jadeite probably from Burma via, 13  
 Partly worked jadeite fragment probably from Burma through, 13  
 Small jadeite disc probably from Burma by way of, 13  
 Section of nephrite boulder said to be from, in China, 33  
 Chinese lapidaries' name for jade assigned to, 33  
 Most authorities agreed that jade is not known to occur geologically in, 33  
 Entrepôt for distribution throughout China of jadeite of Burma, 33  
 Yunnanese, jade bought at Bhamô by, 10  
 Yun Pi Yü, Chinese lapidaries' name for Yunnan moss-green jade, 33  
 Yúrúngkâsh (or White Jade) River, three small nephrite pebbles from, 19  
 Deep trenches cut in old bed of, 19  
 Forded by Dr. Svén Hedin, 19  
 Specially noted for quality of its jade boulders and pebbles, 19, 244 (*note* 1)  
 Lighter colored nephrite pebbles believed to come from, 22  
 Section of water-worn boulder of translucent nephrite probably from, 23

*Yü Shu* (Chinese). *See* Jade Book

Yü the Great, Chinese emperor, bronze vessels first cast by, 106  
 Labors of, in remedying great Chinese inundation, 199, 211

Yverdon, small jadeite hatchet found among remains of ancient pile-dwellings near, 59  
 Explorations among pile-dwellings begun in 1854 in district of, 59

Zealand, New. *See* New Zealand

Zircon, characteristics of, 60

Zmyslona, east of small flat chloromelanite hatchet from, 92

Zodiac, twelve animals (or signs) of (*Shih-érh-Chin*), carved in nephrite, 241, 242

Zoisite, substance so called by H. Traube, 42  
 Thick flat hatchet, with holder, composed of mixture of jadeite, nephrite, and, 58

Zug, Lake. *See* Lake Zug

Zürich, Lake. *See* Lake Zürich

PUBLIC LIBRARY  
 MEDFORD MASS



WELFORD MASS  
PUBLIC LIBRARY





































BOUND BY STIKEMAN, N. Y.



